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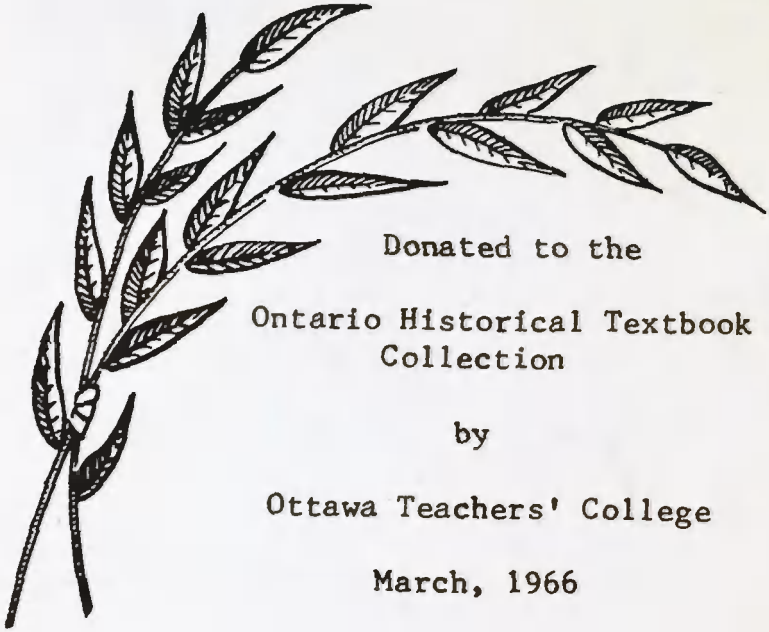
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A YOUNG HOUSEKEEPER.

PUBLIC SCHOOL

DOMESTIC SCIENCE

BY

MRS. J. HOODLESS,

PRESIDENT SCHOOL OF DOMESTIC SCIENCE, HAMILTON.

This Book may be used as a Text-Book in any High or Public School, if so ordered by a resolution of the Trustees.

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"I have come to the conclusion that more than half the disease which embitters the latter half of life is due to avoidable errors in diet, and that more mischief in the form of actual disease, of impaired vigour, and of shortened life, accrues to civilized man in England and throughout Central Europe from erroneous habits of eating than from the habitual use of alcoholic drink, considerable as I know that evil to be."—*Sir Henry Thompson.*

"Knowledge which subserves self-preservation by preventing loss of health is of primary importance. We do not contend that possession of such knowledge would by any means wholly remedy the evil. But we do contend that the right knowledge impressed in the right way would effect much; and we further contend that as the laws of health must be recognized before they can be fully conformed to, the imparting of such knowledge must precede a more rational living."—*Herbert Spencer.*

"Cooking means the knowledge of Medea and Circe, and of Calypso and Helen, and of Rebekah, and of the Queen of Sheba. It means the knowledge of all fruits, and herbs, and balms, and spices, and of all that is healing and sweet in fields and groves, and savory in meats; it means carefulness, and inventiveness, and watchfulness, and willingness, and readiness of appliance; it means much tasting and no wasting; it means English thoroughness, and French art, and Arabian hospitality; it means, in fine, that you are to be perfect and always 'ladies'—'loaf-givers.'"—*Ruskin.*

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PREFACE.

AN eminent authority* says: "Up to the age of sixteen even a lucid statement of principles is received by all but a few pupils as dogma. They do not and cannot in any adequate sense realize the reasoning process by which scientific conclusions are reached. They are taught not only facts but classifications and laws, and causes in relation to their effect. These are not, in the majority of cases, elaborated by the pupil. The teaching of them accordingly degenerates into a statement of facts, and the learning of them into an act of memory."

To obviate this condition, or to at least neutralize its effects somewhat, is one of the principal reasons for introducing Domestic Science into the Public School curriculum; a science which relates so closely to the daily life that it cannot be left to an act of memory; where cause and effect are so palpable that the pupil may readily arrive at an individual conclusion.

The aim of this text-book is to assist the pupil in acquiring a knowledge of the fundamental principles of correct living, to co-ordinate the regular school studies so as to make a practical use of knowledge already acquired. Arithmetic plays an

*S. S. Laurie, A.M., LL.D., Prof. of the Institutes and History of Education, Edinburgh University.

important part in the arranging of weights and measures, in the study of the analysis and relative value of various kinds of food, in estimating the cost of manufactured products in proportion to their market value, in the purchase of food material, etc. History and geography are closely allied to the study of the diet and customs of the different countries, with their variety of climate and products. Physiology and temperance principles permeate the whole course of study. In addition to these are the direct lessons, provided by the practice work, in neatness, promptness and cleanliness. It will therefore be necessary to have a wide general knowledge before entering upon a course in Domestic Science.

Owing to the limited time allowed for this course in the Public Schools, it will be impossible to teach more than a few of the first principles governing each department of the work, viz., a knowledge of the constituent parts of the human body; the classification of food and the relation of each class to the sustenance and repair of the body; simple recipes illustrating the most wholesome and economical methods of preparing the various kinds of food; the science of nutrition, economy and hygiene; general hints on household management, laundry work, and care of the sick.

To enter more fully into the chemistry of food, bacteriology, etc, would tend to cause confusion in the mind of the average school girl, and possibly create a distaste for knowledge containing so much abstract matter.

This book is not a teacher's manual, nor is it intended to take the place of the teacher in any way. The normal training prescribed for teachers will enable them to supplement the information contained herein, by a much more general and comprehensive treatment of the various questions, than would be possible or judicious in a primary text-book. It has been found difficult for pupils to copy the recipes given with each lesson,

or to write out the instructions carefully without infringing upon the time which should be devoted to practice work.* In order to meet this difficulty, also to enable the pupil to work at home under the same rules which govern the class work, simple recipes are given, beginning with a class requiring a knowledge of heat and its effect, going on to those requiring hand dexterity, before attempting the more difficult subjects. After the pupils have acquired a knowledge of the "why and wherefore" of the different processes required in cooking, they will have little difficulty in following the more elaborate recipes given in the numberless cook-books provided for household use. Once the art—and it is a fine art—of cookery is mastered, it becomes not only a pleasant occupation but provides excellent mental exercise, thereby preventing the reaction which frequently follows school life.

The tables given are to be used for reference, and *not to be memorized* by the pupil.

The writer is greatly indebted to Prof. Atwater for his kindly interest and assistance in providing much valuable information, which in some instances is given verbatim; also to Dr. Gilman Thompson for permission to give extracts from his valuable book, "Practical Dietetics"; to Prof. Kinne, Columbia University (Domestic Science Dept.), for review and suggestions; to Miss Watson, Principal Hamilton School of Domestic Science, for practical hints and schedule for school work. The Boston Cook Book (with Normal Instruction), by Mrs. M. J. Lincoln; and the Chemistry of Cooking and Cleaning, by Ellen H. Richards (Prof. of Sanitary Science, Boston Institute of Technology), and Miss Talbot, are recommended to students who desire further

*Where time is allowed, much benefit may be derived from writing notes, as a study in composition, spelling, etc.

information on practical household matters. The publications of the U. S. Experiment Stations, by Prof. Atwater and other eminent chemists, contain much valuable information.

To the school-girls, and future housekeepers of Ontario, this book is respectfully dedicated.

ADELAIDE HOODLESS.

"EASTCOURT,"
Hamilton, June, 1898.

SUGGESTIONS TO TEACHER.

Owing to the limitations of a text-book, it will be necessary for the teacher to enter very carefully into all the details of the various questions; to explain the underlying principles so thoroughly that "the why and the wherefore" of every action in the preparation of food will be clearly understood. She should endeavor to impress upon the pupils the value of thoroughly understanding the relation of food to the body. In practice lessons frequent *reference* should be made to the analysis of the various foods, as given in the tables and charts.

The first practice lesson should be given on the making and care of a fire, regulating dampers, cleaning stove, etc. The pupils should then be taught the name and place of all the utensils. Special attention should be given to the explanation of weights and measures; the table of abbreviations should be memorized. Arrange the class work so that each pupil may in alternation share the duties of both kitchen work and cooking.

Personal cleanliness must be insisted upon. Special attention should be given to the hands and nails. The hair should be carefully pinned back or confined in some way, and covered by a cap. A large clean apron and a holder should be worn while at work. Never allow the pupils to use a handkerchief or their aprons in place of a holder. Untidy habits must not be allowed in the class-room. Set an example of perfect order and neatness, and insist upon pupils following that example. Teach the pupils that cooking may be done without soiling either hands or clothes. The pupils should do all the work of the class-room, except scrubbing the

floor. Everything must be left in perfect order at the close of each lesson.

Frequent *reviews* are absolutely necessary. Urge the pupils to think for themselves, and not to rely upon the text-book. Where pupils are backward, or have not had previous practice in kitchen work, give special attention to their manner of holding a knife or spoon in preparing articles for use, and in beating or stirring mixtures. Encourage deftness and light handling of kitchen ware. Insist upon promptness and keeping within the time limit, both in preparing the food and in the cooking.

Owing to the variety of climate and markets, it would be impossible to arrange the lessons in the text-book in regular order. A few sample menus are given at the back of the book, but each teacher must be governed by circumstances in arranging the lessons for her class. For instance, recipes without eggs should be given in mid-winter, when eggs are dear. Fruits and vegetables must be given in season.

The recipes given in the text-book are suitable for class work ; in some cases it may be necessary to divide them, as the quantities given are intended for home practice. The teacher should consider herself at liberty to substitute any recipe which she may consider valuable. The digestibility of food, the effect of stimulants—especially of tea and coffee, the value of fresh air, etc., should be carefully impressed upon the pupil.

The teacher must keep the object of this instruction constantly before her : (1) to co-ordinate other school studies, such as arithmetic, history, geography, physiology and temperance ; (2) to develop the mental in conjunction with the manual powers of the children ; (3) to enable pupils to understand the reason for doing certain things in a certain way ; in other words, to work with an

intelligent conception of the value, both physically and hygienically, of knowing how the daily duties should be performed.

In order that material may not be needlessly destroyed, each class of food should be introduced by an experimental lesson. For instance, before giving a lesson in the preparation of starches, each pupil should be given an opportunity to learn how to mix and stir the mixture over the fire, so as to prevent it from burning or becoming lumpy ; this may be done by using water and common laundry starch, or flour. The same test applies to sauces, etc. A few cheap apples and potatoes may be used in learning to pare these articles. The effect of cold and hot water on albumen and tissues may be illustrated by the cheaper pieces of meat.

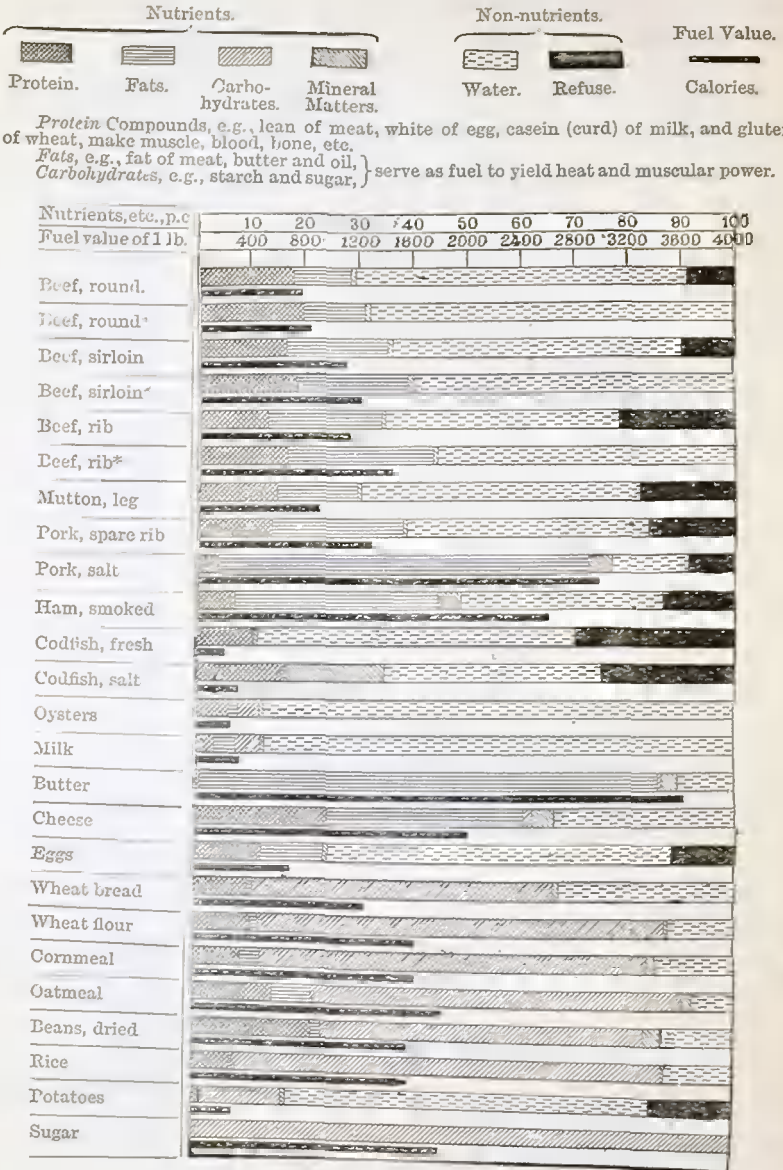
Although the more scientific studies are grouped together, it does not follow that they are to be studied in the order given. The teacher must arrange her lessons—from the beginning—so as to include a certain amount of the theory with the practice work. Frequent reference should be made during practice lessons to the various chapters bearing more directly upon the science of cooking, so as to interest the pupil in the theoretical study of the food question.

The teacher should insist upon the pupils taking careful notes while she is demonstrating a lesson, so that they may not be entirely dependent upon the text-book, which from its limitations must simply serve as the key-note for further study.

Special attention must be given to the chapter on "Digestion," page 58, in the Public School Physiology. This chapter should be studied—especially pages 71-75—in conjunction with "Food Classifications" (Chap. 2) ; also in dealing with the digestibility of starches, etc.

COMPOSITION OF FOOD MATERIALS—*(Atwater).*

Nutritive Ingredients, Refuse, and Fuel Value.



* Without bone.

PECUNIARY ECONOMY OF FOOD—*(Atwater).*

Amounts of actually Nutritive Ingredients obtained in different Food Materials for 10 cents.

Protein. Fats. Carbohydrates. Fuel Value.

Protein compounds, e.g., lean of meat, white of egg, casein (curd) of milk, and gluten of wheat, make muscle, blood, bone, etc.
Fats, e.g., fat of meat, butter and oil, } serve as fuel to yield heat and muscular power.
Carbohydrates, e.g., starch and sugar, }

	Price per pound.	Ten cents will buy—	Pounds of Nutrients and Calories of Fuel Value in 10 cents worth.
			1 Lb. 2 Lbs. 3 Lbs. 4 Lbs.
	Cents.	*Lbs.*	2000 Cal. 4000 Cal. 6000 Cal. 8000 Cal.
Beef, round	12	.83	
Beef, sirloin	18	.55	
Beef, rib	16	.63	
Mutton, leg	12	.83	
Pork, spare rib	12	.83	
Pork, salt, fat	14	.71	
Ham, smoked	16	.63	
Codfish, fresh	8	1.25	
Codfish, salt	6	1.67	
Oysters, 40 cents quart	20	.50	
Milk, 6 cents quart	3	3.33	
Butter	24	.42	
Cheese	16	.63	
Eggs, 25 cents dozen	16⅔	.60	
Wheat bread	4	2.50	
Wheat flour	2½	4.00	
Cornmeal	2	5.00	
Oatmeal	4	2.50	
Beans, *white, dried*	4	2.50	
Rice	5	2.00	
Potatoes, *60 cents bushel*	1	10.00	
Sugar	5	2.00	

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PUBLIC SCHOOL DOMESTIC SCIENCE.

CHAPTER I.

The Relation of Food to the Body.

In order to understand the relation of food to the sustenance and repairing of the body, it will be necessary to learn, first, of what the body is composed, and the corresponding elements contained in the food required to build and keep the body in a healthy condition. The following table gives the approximate analysis of a man weighing 148 pounds:—

Oxygen	92.1	pounds.
Hydrogen	14.6	"
Carbon	31.6	"
Nitrogen	4.6	"
Phosphorus	1.4	"
Calcium	2.8	"
Sulphur	0.24	"
Chlorine	0.12	"
Sodium	0.12	"
Iron	0.02	"
Potassium	0.34	"
Magnesium	0.04	"
Silica	?	"
Fluorine	0.02	"
Total	148.00	pounds.

As food contains all these elements, and as there is constant wearing and repair going on in the body, it will be readily seen how necessary some knowledge of the relation of food to the body is, in order to preserve health.

Hydrogen and oxygen combined form water, hence we find from the above calculation that about three-fifths of the body is composed of water. Carbon is a solid: diamonds are nearly pure carbon; "lead" of lead pencils, anthracite coal and coke are impure forms of carbon. Carbon combined with other elements in the body makes about one-fifth of the whole weight. Carbon with oxygen will burn. In this way the carbon taken into the body as food, when combined with the oxygen of the inhaled air, yields heat to keep the body warm, and force—muscular strength—for work. The carbonic acid (or carbon dioxide) is given out through the lungs and skin. In the further study of carbonaceous foods, their relation to the body as fuel will be more clearly understood, as carbon is the most important fuel element. Phosphorus is a solid. According to the table, about one pound six ounces would be found in a body weighing 148 pounds. United with oxygen, phosphorus forms what is known as phosphoric acid; this, with lime, makes phosphate of lime, in which form it is found in the bones and teeth; it is found also in the brain and nerves, flesh and blood. Hydrogen is a gas, and like carbon unites with the oxygen of the inhaled air in the body, thus serving as fuel. The water produced is given off in the respiration through the lungs and as perspiration through the skin.* Calcium is a metal. The table given allows three pounds of calcium; united with oxygen, calcium forms lime. This with phosphoric acid makes phosphate of lime, the basis of the bones and teeth, in which nearly all the calcium of the body is found.

* An illustration of vapor rising may be given by breathing upon a mirror.

The elements which bear no direct relation to the force production of the body, but which enter into tissue formation, are chlorine, sulphur, iron, sodium, potassium, phosphorus, calcium and magnesium. Bone tissue contains about 50 per cent. of lime phosphate, hence the need of this substance in the food of a growing infant, in order that the bones may become firm and strong. Lack of iron salts in the food impoverishes the coloring matter of the red blood corpuscles on which they depend for their power of carrying oxygen to the tissues; anæmia and other disorders of deficient oxidation result. The lack of sufficient potash salts is a factor in producing scurvy, a condition aggravated by the use of common salt. A diet of salt meat and starches may cause it, with absence of fresh fruit and vegetables. Such illustrations show the need of a well-balanced diet.

In order to understand the value of the various classes of food and their relation to the body as force producers, tissue builders, etc., the following table may prove helpful:—

	Nitrogen.	C. H. Combustibles Calculated as Carbon.
Beef, uncooked	3.00	11.00
Roast beef	3.53	17.76
Calf's liver	3.09	15.68
Foie-gras	2.12	65.58
Sheep's kidneys	2.66	12.13
Skate	3.83	12.25
Cod, salted	5.02	16.00
Herring, salted	3.11	23.00
Herring, fresh	1.83	21.00
Whiting	2.41	9.00
Mackerel	3.74	19.26
Sole	1.91	12.25

	Nitrogen.	C. H. Combustibles Calculated as Carbon.
Salmon	2.09	16.00
Carp	3.49	12.10
Oysters	2.13	7.18
Lobster, uncooked	2.93	10.96
Eggs	1.90	13.50
Milk (cows')	0.66	8.00
Cheese (Brie)	2.93	35.00
Cheese (Gruyere)	5.00	38.00
Cheese (Roquefort)	4.21	44.44
Chocolate	1.52	58.00
Wheat (hard Southern, variable average)	3.00	41.00
Wheat (soft Southern, variable average)	1.81	39.00
Flour, white (Paris)	1 64	38.50
Rye flour	1.75	41.00
Winter barley	1.90	40.00
Maize	1.70	44.00
Buckwheat	2.20	42.50
Rice	1.80	41.00
Oatmeal	1.95	44.00
Bread, white (Paris, 30 per cent. water)	1.08	29.50
Bread, brown (soldiers' rations formerly)	1.07	28.00
Bread, brown (soldiers' rations at present)	1.20	30.00
Bread, from flour of hard wheat	2.20	31.00
Potatoes	0.33	11.00
Beans	4.50	42 00
Lentils, dry	3.87	43.00
Peas, dry	3.66	44.00
Carrots	0.31	5.50
Mushrooms	0.60	4.52
Figs, fresh	0.41	15 50
Figs, dry	0.92	34.00
Coffee (infusion of 100 grams)	1.10	9.00
Tea (infusion of 100 grams)	1.00	10.50
Bacon	1.29	71.14
Butter	0.64	83.00
Olive oil	Trace	98.00
Beer, strong	0.05	4.50
Wine	0.15	4.00

"The hydrogen existing in the compound in excess of what is required to form water with the oxygen present is calculated as carbon. It is only necessary to multiply

the nitrogen by 6.5 to obtain the amount of dry proteids in 100 grams of the fresh food substance." (Dujardin-Beauretz.) The following simple rules are given by Parks:—"1st. To obtain the amount of nitrogen in proteid of foods, divide the quantity of food by 6.30. 2nd. To obtain the carbon in fat multiply by 0.79. 3rd. To obtain the carbon in carbohydrate food multiply by 0.444. 4. To obtain the carbon in proteid food multiply by 0.535."

Finding that our food and our bodies contain essentially the same elements, we must also bear in mind that the body cannot create anything for itself, neither material nor energy; all must be supplied by the food we eat, which is transformed into repair material for the body. Therefore, the object of a course of study dealing with the science of this question, as it relates to the daily life, should be to learn something of how food builds the body, repairs the waste, yields heat and energy, and to teach the principles of food economy in its relation to health and income. This, with the development of executive ability, is all that can be attempted in a primary course.

CHAPTER II.

Food Classification.

The following are familiar examples of compounds of each of the four principal classes of nutrients:

Protein.

- *Proteids.*
 - *Albuminoids, e.g.,* albumen of eggs; myosin, the basis of muscle (lean meat); the albuminoids which make up the gluten of wheat, etc.
 - *Gelatinoids,* constituents of connective tissue which yield gelatin and allied substances, *e.g.,* collagen of tendon; ossein of bone.
- "Nitrogenous extractives" of flesh, *i.e.,* of meats and fish. These include kreatin and allied compounds, and are the chief ingredients of beef tea and most meat extracts.
- Amids: this term is frequently applied to the nitrogenous non-albuminoid compounds of vegetable foods and feeding stuffs, among which are amido acids, such as aspartic acid and asparagin. Some of them are more or less allied in chemical constitution to the nitrogenous extractives of flesh.

Fats — Fat of meat; fat of milk; oil of corn, wheat, etc. The ingredients of the "ether extract" of animal and vegetable foods and feeding stuffs, which it is customary to group together roughly as fats, include, with the true fats, various other substances, as lecithians, and chlorophylls.

Carbohydrates, sugars, starches, celluloses, gums, woody fibre, etc.

Mineral matter. Potassium, sodium, calcium and magnesium chlorids, sulphates and phosphates. (Atwater).

The terms (*a*) "nitrogenous" and (*b*) "carbonaceous" are frequently used to designate the two distinct classes of food, viz.: (*a*) the tissue builders and flesh formers; (*b*) fuel and force producers.

Each of these classes contains food material derived from both the animal and vegetable kingdom, although the majority of the animal substances belong to the nitrogenous, and the majority of the vegetable substances to the carbonaceous group.

Therefore, for practical purposes, we will confine ourselves to the more general terms used in Atwater's table.

Uses of Food.

First, food is used to form the materials of the body and repair its waste; second, to yield energy in the form of (1) heat to keep the body warm, (2) to provide muscular and other power for the work it has to do. In forming the tissues and fluids of the body the food serves for building and repair. In yielding energy, it serves as fuel for heat and power. The principal tissue formers are the albuminoids; these form the frame-work of the body. They build and repair the nitrogenous materials, as those of muscle, tendon and bone, and supply the albuminoids of blood, milk and other fluids. The chief fuel ingredients of food are the carbohydrates and fats. These are either consumed in the body or are stored as fat to be used as occasion demands.

Water.

By referring to a preceding chapter we find that water composes three-fifths of the entire body. The elasticity of muscles, cartilage, tendons, and even of bones is due in great part to the water which these tissues contain. The amount of water required by a healthy man in twenty-four hours (children in proportion) is on the

average between 50 and 60 ounces, beside about 25 ounces taken as an ingredient of solid food, thus making a total of from 75 to 85 ounces. One of the most universal dietetic failings is neglect to take enough water into the system. Dr. Gilman Thompson gives the following uses of water in the body :—

(1) It enters into the chemical composition of the tissues; (2) it forms the chief ingredient of all the fluids of the body and maintains their proper degree of dilution; (3) by moistening various surfaces of the body, such as the mucous and serous membranes, it prevents friction and the uncomfortable symptoms which might result from drying; (4) it furnishes in the blood and lymph a fluid medium by which food may be taken to remote parts of the body and the waste matter removed, thus promoting rapid tissue changes; (5) it serves as a distributer of body heat; (6) it regulates the body temperature by the physical processes of absorption and evaporation.

Salts (Mineral Matter).—Use of Salts in Food.

(1) To regulate the specific gravity of the blood and other fluids of the body; (2) to preserve the tissues from disorganization and putrefaction; (3) to enter into the composition of the teeth and bones. These are only a few of the uses of salts in the body, but are sufficient for our purpose. Fruits and nuts contain the least quantity of salts, meat ranks next, then vegetables and pulses, cereals contain most of all (Chambers). Sodium chloride (common salt) is the most important and valuable salt. It must not however be used in excess. Potassium salts

rank next in importance.* Calcium, phosphorus, sulphur and iron are included in this class.

The quantity of salts or mineral matter contained in some important articles of vegetable and animal food is shown in this table (Church):

Mineral Matter in 1,000 lbs. of 14 Vegetable Products.

	Lbs.		Lbs.
Apples	4	Bread	12
Rice	5	Watercress	13
Wheaten flour	7	Maize	20
Turnips	8	Oatmeal	21
Potatoes	10	Peas	30
Barley	11	Cocoa nibs	36
Cabbage	12	Wheaten bran	60

Mineral Matter in 1,000 lbs. of 8 Animal Products.

	Lbs.		Lbs.
Fat Pork	5	Flesh of common fowl	16
Cow's milk	7	Bacon	44
Eggs (without shells)	13	Gloucester cheese	49
Lean of mutton	17	Salted herrings	158

"In most seeds and fruits there is much phosphate in the mineral matter, and in most green vegetables much potash. One important kind of mineral matter alone is deficient in vegetable food, and that is common salt."

* See Vegetables, Chap. VII.

CHAPTER III.

Nutrition.

It is not within the scope of this book to deal with the science of nutrition; but a few general principles may be given which concern the effect upon the system of the different classes of food. Animal food requires a considerable quantity of oxygen for its complete combustion. Meat in general has a more stimulating effect upon the system and is more strengthening than vegetable food. There is, however, a tendency to eat too much meat, and when its effects are not counterbalanced by free outdoor exercise, it causes biliousness and sometimes gout and other troubles. Albuminous foods can be eaten longer alone without exciting loathing than can fats, sugars or starches. A carbonaceous diet taxes the excretory organs less than animal food. Meat is not necessary to life. Nitrogenous food man must have, but it need not be in the form of meat. The estimate commonly given is, that meat should occupy one-fourth and vegetable food three-fourths of a mixed diet, but in many cases the meat eaten is much in excess of this allowance. The proper association of different foods always keeps healthy people in better condition; there are times, however, when it may be necessary to abstain from certain articles of diet. It may be well to bear in mind, that the protein compounds can do the work of the carbohydrates and fats in being consumed for fuel, but the carbohydrates and fats cannot do the work of protein in building and

repairing the tissues of the body. As already stated, a mixed diet is the only rational one for man. An exclusively vegetable diet, while it may maintain a condition of health for a time, eventually results in a loss of strength and power to resist disease. Therefore it is necessary to understand the approximate value of each class of food in arranging the daily dietary.

CHAPTER IV.

Food and Economy.

It has been stated that "a quart of milk, three-quarters of a pound of moderately lean beef, and five ounces of wheat flour contain about the same amount of nutritive material;" but we pay different prices for them, and they have different values for nutriment. The milk comes nearest to being a perfect food. It contains all the different kinds of nutritive materials that the body requires. Bread made from wheat flour will support life. It contains all the necessary ingredients for nourishment, but not in the proportion best adapted for ordinary use. A man might live on beef alone, but it would be a very one-sided and imperfect diet. Meat and bread together make the essentials of a healthful diet. In order to give a general idea of food economy, it will be necessary to deal briefly with the functions of the various food principles. As our bodies contain a great deal of muscle, the waste of which is repaired by protein found in such food as lean meat, eggs, cheese, beans, peas, oatmeal, fish, etc., a supply of these articles must be considered in purchasing the daily supply. Fatty tissue (not muscle) serves as fuel, therefore the value of such foods as butter, cream, oils, etc., is apparent. Carbohydrates form fat and serve as fuel and force producers; these come in the form of starches, sugars,—vegetables and grains being the most important. "In being themselves burned to yield energy, the nutrients protect each other from being consumed. The protein and fats of body tissue are used like those

of foods. An important use of the carbohydrates and fats is to protect protein (muscle, etc.) from consumption. "The most healthful food is that which is best fitted to the wants of the user: the cheapest food is that which furnishes the largest amount of nutriment at the least cost: the best food is that which is both healthful and cheap." By referring to the various charts a fair estimate of food values may be obtained.

As will be noticed, the animal foods contain the most protein and fats, while the vegetable foods are rich in carbohydrates. A pound of cheese may have 0.28 pound of protein, as much as a man at ordinary work needs for a day's sustenance, while a pound of milk would have only 0.04, and a pound of potatoes 0.02 pound of protein. The materials which have the most fats and carbohydrates have the highest fuel value. The fuel value of a pound of fat pork may reach 2.995 calories, while that of a pound of salt codfish would be only .315 calories. On the other hand, the nutritive material of the codfish would consist almost entirely of protein, while the pork contains very little. Among the vegetable foods, peas and beans have a high proportion of protein. Oatmeal contains a large proportion also. Potatoes are low in fuel value as well as in protein, because they are three-fourths water. For the same reason milk, which is seven-eights water, ranks low in respect to both protein and fuel value, hence the reason why it is not so valuable as food for an adult as many of the other food materials.

These few illustrations will help to show the need of an intelligent idea of food values before attempting to purchase the supplies for family use. As one-half a

laboring man's income goes towards providing food, it must follow that such knowledge will help the housewife very materially in securing the best results from the amount expended.

The *average daily diet* of an adult should contain (Church):—

Nutrients.	In 100 Parts.	Each 24 Hours.		
		lb.	oz.	gr.
Water	81.5	5	8	.320
Albuminoids	3.9	0	4	.110
Starch, sugar, etc.	10.6	0	11	.178
Fat	3.0	0	3	.337
Common salt	3.7	0	0	.325
Phosphates, potash, salts, etc.	0.3	0	0	0.170

Quantity of Food Required.

The quantity of food required to maintain the body in a vigorous condition depends upon the following conditions:—(1) Climate and season, (2) clothing, (3) occupation, (4) age and sex. In civilized countries more food is eaten, as a rule, than is necessary to maintain health and strength. Climate and seasons influence the quantity of food eaten. A cold, bracing atmosphere stimulates the appetite, tempts one to exercise, while a hot climate has the contrary effect; hence the need for more or less food. Abundant clothing in cold weather conserves the body heat; less food is therefore required to maintain life. Exercise and muscular work cause greater oxidation in the tissues and greater waste of the muscles; this must be replaced by proper food. Outdoor work requires more food than indoor, and physical labor more than

mental. It has been estimated "that a child of ten years requires half as much food as a grown woman, and one of fourteen an equal amount. The rapidly growing active boy often eats as much as a man, and the middle-aged man requires more than the aged. A man of seventy years may preserve health on a quantity which would soon starve his grandson."

Just what ingredients of the food serve for nourishment of the brain and nerves, and how they do that service, are mysteries which have not yet been solved. Brain and nerve contain the elements nitrogen and phosphorus, which are found in protein compounds but not in the true fats, sugars, and starches, which contain only carbon, hydrogen and oxygen. We naturally infer that the protein compounds must be especially concerned in building up brain and nerve, and keeping them in repair. Just how much food the brain worker needs is a question which has not yet been decided. In general it appears that a man or a woman whose occupation is what we call sedentary, who is without vigorous exercise and does but little hard muscular work, needs much less than the man at hard manual labor, and that the brain worker needs comparatively little of carbohydrates or fats. Many physicians, physiologists and students of hygiene have become convinced that well-to-do people, whose work is mental rather than physical, eat too much; that the diet of people of this class as a whole is one-sided as well as excessive, and that the principal evil is the use of too much fat, starch and sugar. It is well to remember that it is the quantity of food digested which builds the body, and more injury is likely to result from over-eating than from a restricted diet, hence the value

of having food cooked so as to aid digestion. The following dietary standards may be interesting to the more advanced pupils, housewives, etc. :—

STANDARDS FOR DAILY DIET OF LABORING MAN AT MODERATE MUSCULAR WORK.

AUTHOR.	PROTEIN.	FATS.	NUTRIENTS IN DAILY FOOD.	
			Carbohydrates.	Fuel Value.
	lb.	lb.	lb.	Calories.
Playfair, England.	.26	.11	1.17	3.140
Moleschotte, Italy.....	.29	.09	1.21	3.160
Wolff, Germany.....	.28	.08	1.19	3.030
Voit, Germany.....	.26	.12	1.10	3.055
Atwater, United States..	.28	17.33	88.1.21	3.500

Quality of Food.

It is a great mistake to think that the best is the cheapest in regard to the food question, that the higher priced meats, fish, butter, etc., contain special virtues lacking in the cheaper articles. *Poor cooking is the chief cause of this error in judgment.* No doubt a well broiled steak is more appetizing and delicate in flavor than some of the cheaper cuts, but in proportion to the cost is not equal in nutritive value; careful cooking and judicious flavoring render the cheaper pieces of beef equally palatable. That expensive food is not necessary to maintain life has been clearly demonstrated by the traditional diet of the Scotch people with their oatmeal and herring; the Irish, potatoes and buttermilk; New England, codfish and potatoes, and pork and beans; the Chinese, rice, etc. Monotony of diet, however, is not recommended, for reasons

given in a previous chapter, and in the countries where a special diet prevails owing to the climate, nature of soil and markets, the results have not warranted us in believing that it is as good as a mixed diet. From this necessarily brief outline of the food question we have learned (1) that a knowledge of the requirements of the body are absolutely necessary in regulating a proper diet; (2) to furnish the food principles in a cheap rather than a dear form; (3) to understand the art of cookery so as to secure the full nutritive value and at the same time stimulate the appetite; (4) the value of economy in regard to food principles. When the housekeeper has acquired this knowledge she will have covered the field of food economy. Prof. Atwater says: "When we know what are the kinds and amount of nutritive substances our bodies need and our food materials contain, then and not till then shall we be able to adjust our diet to the demands of health and purse."

Cooking of Food.

It is sometimes asked, why do we cook our food? As many opportunities will occur during this course of instruction for a comparison of the customs and diet of the various countries, and the advance of civilization in this direction, we will confine ourselves to the definition of the term as it concerns ourselves.

Mr. Atkinson says, that "Cooking is the right application of heat for the conversion of food material."

As much of our food requires cooking, how we shall cook it so as to render it more palatable, more digestible, and with the greatest economy of time, fuel and money,

is an object deserving the most careful attention. The art of cooking lies in the power to develop certain flavors which are agreeable to the palate, or in other words, which "make the mouth water," without interfering with the nutritive qualities of the food prepared, to understand by what method certain foods may be rendered more digestible, and to provide variety. Monotony of diet and of flavor lessens the appetite and fails to stimulate the digestive organs.

The chemical changes, produced by cooking food properly, aid digestion, beside destroying any germs which may be contained in the food. Nearly all foods—except fruit—require cooking. The digestibility of starch depends almost entirely upon the manner in which it is cooked, especially the cereal class. Gastric troubles are sure to follow the use of improperly cooked grains or starches. (See Chap. VII.)

Methods.

The following are the usual methods observed in cooking, viz.: (1) boiling, (2) stewing, (3) roasting, (4) broiling, (5) frying, (6) braising, (7) baking, (8) steaming.

BOILING. Water boils at a temperature of 212° F. Simmering should be at a temperature of from 175° F. to 180° F. When water has reached the boiling point, its temperature cannot be raised, but will be converted into steam; hence the folly of adding fuel to the fire when water has already reached the boiling point.

STEWING. Stewing allows the juices of the meat to become dissolved in water heated to the simmer-

ing point. The juices thus dissolved are eaten with the meat. If not injured by the addition of rich sauces or fats, this is usually a very digestible method of preparing certain kinds of meat.

BROILING. Broiling is cooking directly over the hot coals. A coating of coagulated albumen is formed upon the outer surface. This coating prevents the evaporation of the juices, which with the extractive materials are retained and improve the flavor. Meat cooked in this way has a decided advantage, in both flavor and nutritive value, over that which has been boiled or stewed. There are, however, only certain kinds of meat that are suitable for broiling.

FRYING. Frying is cooking in hot fat. The boiling point of fat is far above that of water. Fat should not be heated above 400° F., as it will then turn dark and emit a disagreeable odor. Fried food, unless very carefully prepared, is considered unwholesome. The only proper method for frying is to immerse the food completely in a bath of hot fat.

BRAISING. Braising is cooking meat in a covered vessel surrounded by a solution of vegetable and animal juices in a strong but not boiling temperature. Tough meat may be rendered very palatable and nutritious by cooking in this way. The cover of the pan or kettle must fit closely enough to prevent evaporation. It requires long, steady cooking. The flavor is improved by browning the

meat in either hot fat or in a very hot oven before braising.

BAKING. Baking is cooking in confined heat. Meat properly cooked in an oven is considered by many authorities as quite equal in delicacy of flavor to that roasted before a fire, and is equally digestible.

STEAMING. Steaming is cooking food over condensed steam, and is an excellent method for preparing food which requires long, slow cooking. Puddings, cereals, and other glutinous mixtures are often cooked in this way. It is an economical method, and has the advantage of developing flavor without loss of substance.

Food Preservation.

Food is preserved by the following processes: (1) drying, (2) smoking, (3) salting, (4) freezing, (5) refrigerating, (6) sealing, (7) addition of antiseptic and preservative substances.

DRYING. Drying in the sun and before a fire is the usual method employed by housekeepers. Fruits and vegetables, meat and fish may be preserved by drying, the latter with the addition of salt.

SMOKING. Smoking is chiefly applied to beef, tongue, bacon, ham, and fish, which are hung in a confined chamber, saturated with wood smoke for a long time until they absorb a certain percentage of antiseptic material, which prevents the fat from becoming rancid, and the albumen from putrefying. Well smoked bacon cut thin and

properly cooked is a digestible form of fatty food, especially for tubercular patients. Smoking improves the digestibility of ham.

SALTING. Salting is one of the oldest methods of preserving food. The addition of a little saltpetre helps to preserve the color of the meat. Brine is frequently used to temporarily preserve meat and other substances. Corned beef is a popular form of salt preservation. All salted meats require long, slow cooking. They should always be placed in cold water and heated gradually in order to extract the salt. Salt meats are less digestible and not quite so nutritious as fresh meats.

FREEZING. Food may be kept in a frozen condition almost indefinitely, but will decompose very quickly when thawed, hence the necessity for cooking immediately. Frozen meat loses 10 per cent. of its nutritive value in cooking.

REFRIGERATING. This process does not involve actual freezing, but implies preservation in chambers at a temperature maintained a few degrees above freezing point. This method does not affect the flavor or nutritive value of food so much as freezing.

SEALING. Sealing is accomplished not only in the process of canning but by covering with substances which are impermeable. Beef has been preserved for considerable time by immersing in hot fat in which it was allowed to remain after cooling.

CHEMICALS. Chemicals are sometimes used in the preservation of food, but the other methods are safer.

CHAPTER V.

Foods Containing Protein, or Nitrogenous Matter.

Animal foods contain nutritive matter in a concentrated form, and being chemically similar to the composition of the body is doubtless the reason why they assimilate more readily than vegetable foods, although the latter are richer in mineral matter. The most valuable animal foods in common use are meat, eggs, milk, fish, gelatin and fats.

MEAT. Meat is composed of muscular tissue, connective tissue or gristle, fatty tissue, blood-vessels, nerves, bone, etc. The value of meat as food is due chiefly to the nitrogenous compound it contains, the most valuable being the albuminoids; the gelatinoid of meat is easily changed into gelatin by the action of hot water. Gelatin when combined with the albuminoids and extractives has considerable nutritive value. Extractives are meat bases, or rather meat which has been dissolved by water, such as soup stock and beef tea. The object in cooking meat is to soften and loosen the tissue, which renders it more easily digested. Another object is to sterilize or kill any germs which may exist and to make it more palatable. The digestibility of meat is influenced by the age of the animal killed and the feeding. The following table is given as an average of the digestibility of animal foods:—

Table of Comparative Digestibility.

Commencing with the most digestible and ending with the least digestible of meats and other animal foods. (Thompson.)

Oysters.	Tripe, brains, liver.
Soft cooked eggs.	Roast lamb.
Sweetbread.	Chops, mutton or lamb.
Whitefish, etc.	Corn beef.
Chicken, boiled or broiled.	Veal.
Lean roast beef or beefsteak.	Duck and other game.
Eggs, scrambled, omelette.	Salmon, mackerel, herring.
Mutton.	Roast goose.
Bacon.	Lobster and crabs.
Roast fowl, chicken, turkey, etc.	Pork.
	Fish, smoked, dried, pickled.

Cooking affects the digestibility of meat, which is evident from the figures given in the following table (Church):—

Time of Digestion.

	Hours.		Hours.
Beef, raw	2	Mutton, roasted	3¼
Beef, half boiled	2½	Veal, raw	2½
Beef, well boiled	2¾ to 3	Pork, raw	3
Beef, half roasted	2¾ to 3	Pork, roasted	5¼
Beef, well roasted	2¼ to 4	Fowl, boiled	4
Mutton, raw	2	Turkey, boiled	2½
Mutton, boiled	3	Venison, broiled	1½

It may be well to add here that animal food is more digestible when cooked between 160° and 180° F. than at a higher temperature.

Cooking of Meat.

(For more general information, see Recipes.)

In boiling meat two principles must be considered, the softening of the fibre and preserving

of the juices. If the meat alone is to be used it should be placed in sufficient boiling water to completely cover, and kept at boiling point (212° F.) for at least ten minutes, so as to harden the albumen and prevent the escape of the juices. The temperature should then be allowed to fall to simmering point (175° F.). If the water is kept boiling it will render the meat tough and dry. If the juice is to be extracted and the broth used, the meat should be placed in cold water; if bones are added they should be cut or broken into small pieces in order that the gelatin may be dissolved. If the water is heated gradually the soluble materials are more easily dissolved. The albumen will rise as a scum to the top, but should not be skimmed off, as it contains the most nutriment and will settle to the bottom as sediment.

STEWING. If both meat and broth are to be used the process of cooking should be quite different. In stewing, the meat should be cut into small pieces, put into cold water in order that the juices, flavoring material and fibre may be dissolved. The temperature should be gradually raised to simmering point and remain at that heat for at least three or four hours, the vessel being kept closely covered. Cooked in this way the broth will be rich, and the meat tender and juicy. Any suitable flavoring may be added. This is a good method for cooking meat containing gristle.

ROASTING AND BROILING. When the meat alone is to be eaten, either roasting, broiling or frying in deep fat is a more

economical method, as the juices are saved. The shrinkage in a roast of meat during cooking is chiefly due to a loss of water. A small roast will require a hotter fire than a larger one, in order to harden the exterior and prevent the juices from escaping. Meat is a poor conductor of heat, consequently a large roast exposed to this intense heat would become burned before the interior could be heated. The large roast should be exposed to intense heat for a few minutes, but the temperature should then be reduced, and long steady cooking allowed.

Broiling (see broiling in previous chapter, p. 19.)

Varieties of Meat.

Beef tongue is a tender form of meat, but contains too much fat to agree well with people of delicate digestion. BEEF TONGUE.

Veal, when obtained from animals killed too young, is apt to be tough, pale and indigestible, but good veal is considered fairly nutritious. It contains more gelatin than beef, and in broth is considered valuable, especially for the sick. VEAL.

Mutton is considered to be more digestible than beef, that is well fed mutton from sheep at least three years old; but as it is more difficult to obtain tender mutton than beef, the latter is more generally preferred. Mutton broth is wholesome and valuable in sickness. MUTTON.

Lamb, when tender and of the right age, is quite as digestible as beef or mutton, but the flesh contains too large a proportion of fat. LAMB.

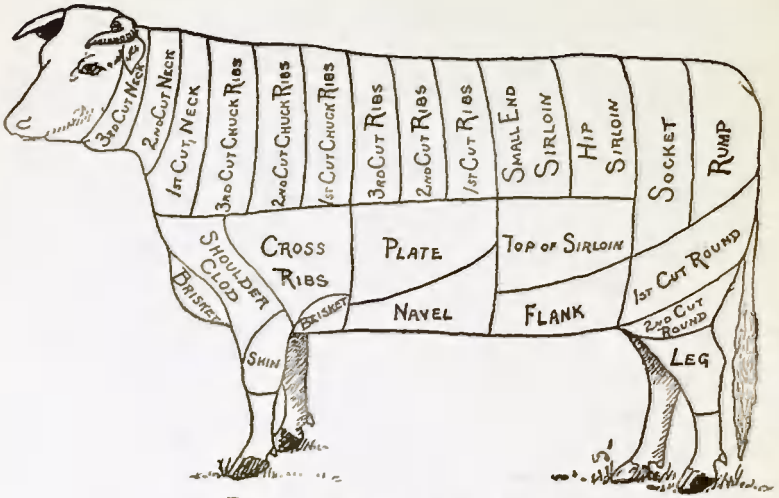


FIG. 1.—Diagram of cuts of beef.

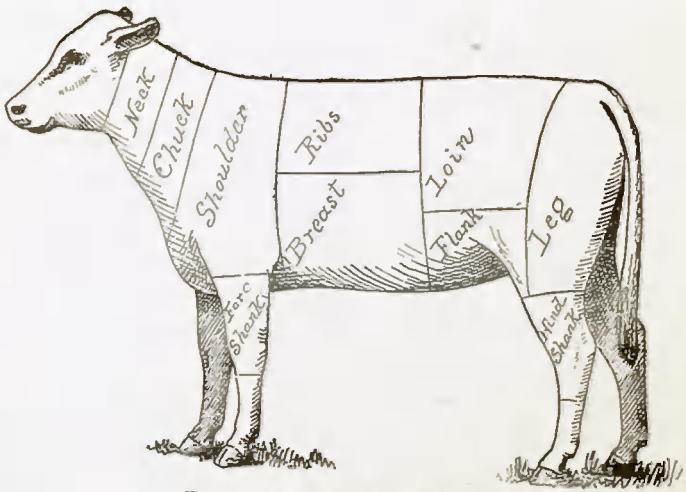


FIG. 2.—Diagram of cuts of veal.

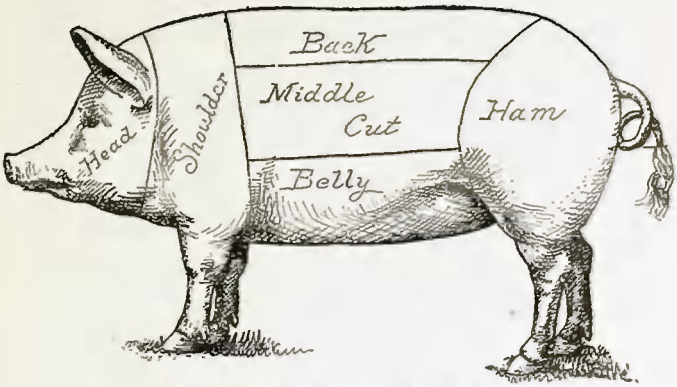


FIG. 3.—Diagram of cuts of pork.

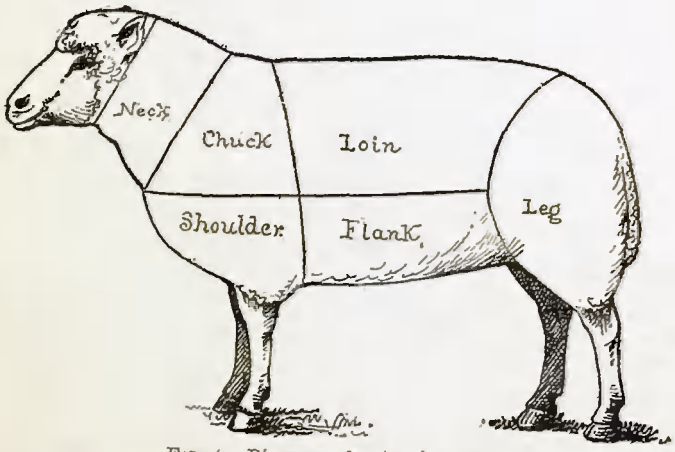


FIG. 4.—Diagram of cuts of mutton.

VENISON. Venison is a tender meat with short fibres, which is very digestible when obtained from young deer, but is considered to be rather too stimulating. Its chemical composition is similar to lean beef.

PORK. Pork is a tender-fibred meat, but is very indigestible owing to the high percentage of fat, which is considerably more than the nitrogenous material it contains. Pork ribs may have as much as 42 per cent. of fat.

HAM AND BACON. Ham is more digestible when well boiled and eaten cold. Bacon is more easily digested than either ham or pork; when cut thin and cooked quickly—until transparent and crisp—it can often be eaten by dyspeptics, and forms an excellent food for consumptives.

FOWL. Chicken is one of the most digestible of meats, contains considerable phosphorus and is particularly valuable as food for invalids. Turkey is somewhat less digestible than chicken. Ducks and geese are difficult of digestion, unless quite young, on account of the fat they contain.

GAME. Game, if well cooked, is fairly digestible.

SWEETBREAD. Sweetbread, which is thymus gland of the calf, is a delicate and agreeable article of diet, particularly for invalids. Tripe, heart, liver and kidneys are other forms of animal viscera used as food—valuable chiefly as affording variety.

FISH. The chief difference in fish is the coarseness of fibre and the quantity of fat present. Fish which are highly flavored and fat, while they

may be nutritious, are much less easy of digestion than flounder, sole, whitefish, and the lighter varieties. The following fish contain the largest percentage of albuminoids:—Red snapper, whitefish, brook trout, salmon, bluefish, shad, eels, mackerel, halibut, haddock, lake trout, bass, cod and flounder. The old theory that fish constituted "brain food," on account of the phosphorus it contained, has proved to be entirely without foundation, as in reality many fish contain less of this element than meat. The tribes which live largely on fish are not noted for intellectuality. Fish having white meat when broiled or boiled—not fried—are excellent food for invalids or people of weak digestion. Fish should be well cooked.

OYSTERS.

Oysters are a nutritious food, and may be eaten either raw or cooked. Lobsters, crabs and shrimps are called "sea scavengers," and unless absolutely fresh are not a desirable food.

MILK.

Milk contains all the elements which are necessary to maintain life; and constitutes a complete diet for infants. It will sustain life in an adult for several months. Although milk furnishes a useful food, it is not essential to a diet required for active bodily exercise. It is seldom given to athletes while in active training. Adults who are able to eat any kind of food are kept in better health by abstaining from milk, except as used for cooking purposes. An occasional glass of hot milk taken as a stimulant for tired brain and nerves is sometimes beneficial.

Milk is composed of water, salts, fat, milk sugar or lactose, albumen and casein. Average milk has from 8 to 10 per cent. of cream. Good milk should form a layer of cream about 2½ in. thick as it stands in a quart bottle. Lactose (milk sugar) is an important ingredient in milk. It is less liable to ferment in the stomach than cane sugar. In the presence of fermenting nitrogenous material it is converted into lactic acid, making the milk sour. Casein is present in milk chiefly in its alkaline form, and in conjunction with calcium phosphate. Milk absorbs germs from the air and from unclean vessels very readily. Good, clean, uncontaminated milk ought to keep fresh, exposed in a clean room at a temperature of 68° F., for 48 hours without souring. If the milk is tainted in any way it will sour in a few hours. Boiled milk will keep fresh half as long again as fresh milk. Milk absorbs odors very quickly, therefore should never be left in a refrigerator with stale cheese, ham, vegetables, etc., unless in an air-tight jar. It should never be left exposed in a sick room or near waste pipes. Absolute cleanliness is necessary for the preservation of milk; vessels in which it is to be kept must be thoroughly scalded with boiling water, not merely washed out with warm water.

Methods of Preserving Milk.

STERILIZED MILK.

Milk to be thoroughly sterilized and germ free must be heated to the boiling point (212° F.).

This may be done by putting the milk into perfectly clean bottles and placing in a rack, in a kettle of boiling water, remaining until it reaches the necessary degree of heat. The bottle should be closely covered *immediately* after with absorbent cotton or cotton batting in order to prevent other germs getting into the milk.

PASTEURIZED MILK.

The difference between pasteurizing and sterilizing is only in the degree of heat to which the milk is subjected. In pasteurizing, the milk is kept at a temperature of 170° F. from 10 to 20 minutes. This is considered a better method for treating milk which is to be given to young children, as it is more easily digested than sterilized milk. All milk should be sterilized or pasteurized in warm weather, especially for children.

CHEESE.

Cheese is one of the most nutritious of foods, and when meat is scarce makes an excellent substitute, as it contains more proteid than meat. Cheese is the separated casein of milk, which includes some of the fats and salts.

EGGS.

Eggs contain all the ingredients necessary to support life. Out of an egg the entire structure of the bird—bones, nerves, muscles, viscera, and feathers—is developed. The inner portion of the shell is dissolved to furnish phosphate for the bones. The composition of a hen's egg is about as follows (Church):—

	White—In 100 parts.		Yolk—In 100 parts.
Water	84.8	Water	51.5
Albumen	12.0	Casein and albumen	15.0
Fat, sugar, extractives, etc	2.0	Oil and fat	30.0
Mineral matter	1.2	Pigment extractives, etc	2.1
		Mineral matter	1.4

The albumen—or the "white"—of an egg is greatly altered by cooking. When heated beyond boiling point it becomes a very indigestible substance. Eggs cooked at a temperature of about 170° F., leaving the whites soft, are easily digested. A raw egg is ordinarily digested in 1½ hour, while a baked egg requires from 2 to 3 hours. Eggs *baked* in puddings, or in any other manner, form one of the most insoluble varieties of albumen.

GELATIN. Gelatin is obtained from bones, ligaments, and other connective tissues. In combinations with other foods it has considerable nutritive value. The place given to it by scientists is to save the albumen of the body; as it does not help to form tissue or repair waste it cannot replace albumen entirely. Gelatin will not sustain life, but when used in the form of soup stock, etc., is considered valuable as a stimulant.

LEGUMES—PEAS, BEANS AND LENTILS.

These vegetables contain as much proteid as meat; yet, this being inferior in quality to that

contained in meat, they can scarcely be given a place in the same class; therefore we will give them an intermediate position in food value between meat and grains. From the standpoint of economy they occupy a high place in nutritive value, especially for out-door workers. (See Recipes.)



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CHAPTER VI.

Fats and Oils.

Fats and oils contain three elements—carbon, oxygen and hydrogen. About one-fifth of the body is composed of fat. Before death results from starvation 90 per cent. of the body fat is consumed.

USES OF FAT.

(1) To furnish energy for the development of heat; (2) to supply force; (3) to serve as covering and protection in the body; (4) to lubricate the various structures of the body; and (5) to spare the tissues. The fats and oils used as food all serve the same purpose, and come before the carbohydrates in fuel and force value; in combination with proteids, they form valuable foods for those engaged in severe muscular exercise, such as army marching, mining expeditions, etc.

Fats and oils are but little changed during digestion. The fat is divided into little globules by the action of the pancreatic juice and other digestive elements, and is absorbed by the system. Fat forms the chief material in adipose tissue, a fatty layer lying beneath the skin, which keeps the warmth in the body, and is re-absorbed into the blood, keeping up heat and activity, and preserving other tissues during abstinence from food. Fat sometimes aids the digestion of starchy foods by preventing them from forming

lumpy masses in the mouth and stomach, hence the value of using butter with bread, potatoes, etc. The animal fats are more nutritive than the vegetable, butter and cream heading the list. Cooking fats at a very high temperature, such as frying, causes a reaction or decomposition, which irritates the mucous membrane and interferes with digestion.

The principal animal fats are butter, cream, lard, suet, the fat of mutton, pork, bacon, beef, fish and cod liver oil. The vegetable fats and oils chiefly used as food are derived from seeds, olives, and nuts. The most important fats and oils for household purposes are:

BUTTER. Butter, which contains from 5 to 10 per cent. of water, 11.7 per cent. fat, 0.5 per cent. casein, 0.5 per cent. milk sugar (Konig). The addition of salt to butter prevents fermentation. Butter will not support life when taken alone, but with other foods is highly nutritious and digestible.

CREAM. Cream is one of the most wholesome and agreeable forms of fat. It is an excellent substitute for cod liver oil in tuberculosis. Ice cream when eaten slowly is very nutritious.

LARD. Lard is hog fat, separated by melting.

SUET. Suet is beef fat surrounding the kidneys.

COTTOLENE. Cottolene is a preparation of cotton-seed oil.

OLEOMARGARINE. Oleomargarine is a preparation of beef fat provided as a substitute for butter.

OLIVE OIL. Olive oil is obtained from the fruit, and is considered to be very wholesome; in some cases being preferred to either cod-liver oil or cream for consumptives.

COTTON SEED OIL. Cotton seed oil is frequently substituted for olive oil.

NUTS. Nuts contain a good deal of oil.

CHAPTER VII.

Carbohydrate Foods.

The idea of starchy foods is usually connected with such substances as laundry starch, corn-starch, arrow root, etc. These are, of course, more concentrated forms of starch than potatoes, rice, etc. Many starchy foods contain other ingredients, and some are especially rich in proteids.

The following table may help to make this clear (Atwater):—

PERCENTAGE OF STARCH IN VEGETABLE FOODS.

	Per Cent.		Per C't.
Wheat bread	55.5	Potatoes	21.3
Wheat flour	75.6	Sweet Potatoes	21.1
Graham flour	71.8	Turnips	6.9
Rye flour	78.7	Carrots	10.1
Buckwheat flour	77.6	Cabbage	6.2
Beans	57.4	Melons	2.5
Oatmeal	68 1	Apples	14.3
Cornmeal	71.0	Pears	16.3
Rice	79.4	Bananas	23.3

It is estimated that starch composes one-half of peas, beans, wheat, oats and rye, three-fourths of corn and rice, one-fifth of potatoes. Vegetable proteids, as already stated, are less easily digested than those belonging to the animal kingdom, therefore it must be remembered that a purely vegetable diet, even though it may be so arranged as to provide the necessary protein, is apt to

over-tax the digestive organs more than a mixed diet from both the animal and vegetable kingdoms. Much depends upon the cooking of the starchy foods in order to render them digestible. (Study chapter on Digestion in the Public School Physiology.)

STARCH. The digestion of starch—which is insoluble in cold water—really begins with the cooking, which by softening the outer coating or fibre of the grains, causes them to swell and burst, thereby preparing them for the chemical change which is caused by the action of the saliva in converting the starch into a species of sugar before it enters the stomach. Substances which are insoluble in cold water cannot be absorbed into the blood, therefore are not of any value as food until they have become changed, and made soluble, which overtaxes the digestive organs and causes trouble. The temperature of the saliva is too low to dissolve the starch fibre unaided. Each of the digestive juices has its own work to do, and the saliva acts directly upon the starchy food; hence the importance of thoroughly masticating such food as bread, potatoes, rice, cereals, etc. The action of heat, in baking, which causes the vapor to rise, and forms the crust of starchy food, produces what is called dextrine, or partially digested starch. Dextrine is soluble in cold water, hence the ease with which crust and toast—when properly made—are digested. It is more important to thoroughly chew starchy food than

meat, as it is mixed with another digestive juice, which acts upon it in the stomach.

Sugars.

There are many varieties of sugar in common use, viz.: cane sugar, grape sugar or glucose, and sugar of milk (lactose). As food, sugars have practically the same use as starch; sugar, owing to its solubility, taxes the digestive organs very little. Over-indulgence in sugar, however, tends to cause various disorders of assimilation and nutrition. Sugar is also very fattening, it is a force producer, and can be used with greater safety by those engaged in active muscular work. Cane sugar is the clarified and crystallized juice of the sugar cane. Nearly half the sugar used in the world comes from sugar cane, the other half from beet roots. The latter is not quite so sweet as the cane sugar. Sugar is also made from the sap of the maple tree, but this is considered more of a luxury; consequently, not generally used for cooking purposes. SUGAR.

Molasses and treacle are formed in the process of crystallizing and refining sugar. Treacle is the waste drained from moulds used in refining sugar, and usually contains more or less dirt. MOLASSES AND TREACLE.

Glucose, or grape sugar, is commonly manufactured from starch. It is found in almost all the sweeter varieties of fruit. It is not so desirable for general use as cane sugar. GLUCOSE.

Honey is a form of sugar gathered by bees from the nectar of flowering plants, and stored HONEY.

by them in cells. Honey contains water 16.13, fruit sugar 78.74, cane sugar 2.69, nitrogenous matter 1.29, mineral matter 0.12 per cent. (Konig.)

Grains.

While the grains contain less proteid than the legumes, they are more valuable on account of the variety of the nutrients contained in them, and are more easily adapted to the demands of the appetite. They, however, require long, slow cooking in order to soften the fibre and render the starch more soluble. Among the most important we may place:

WHEAT. A wheat kernel may be subdivided into three layers. The first or outer one contains the bran; second, the gluten, fats and salts; third, the starch. Some of the mineral matter for which wheat is so valuable is contained in the bran, hence the value of at least a portion of that part of the wheat being included in bread flour — not by the addition of coarse bran (which is indigestible) to the ordinary flour, but by the refining process employed in producing whole wheat flour. While wheat is used in other forms, its principal use as food is in the form of flour.

The following table, giving the composition of bread from wheat and maize, will be of interest (Stone):—

Composition of Bread from Wheat and Maize.

	In Air-Dry Material.						In Dry Matter.				
	Water.	Ash.	Fat.	Fibre.	Protein.	Nitrogen free extract.	Ash.	Fat.	Fibre.	Protein.	Nitrogen free extract.
	P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
Bread from whole winter wheat	3.07	2.33	1.22	2.86	15.70	74.82	2.40	1.25	2.95	16.20	77.20
Bread from whole spring wheat	7.46	1.69	1.24	2.80	15.26	71.55	1.82	1.34	3.02	16.49	77.33
Bread from fine flour, winter wheat	10.39	.59	.32	.44	11.94	76.32	.66	.35	.49	13.33	85.17
Bread from fine flour, spring wheat	8.00	.43	.47	.39	14.41	76.30	.47	.51	.42	15.66	82.94
Corn bread from whole maize	3.40	1.88	4.14	2.53	12.88	75.17	1.95	4.29	2.62	13.33	77.81

BREAD. The most valuable food product manufactured from flour is bread.

Bread contains so many of the ingredients required to nourish the body, viz.: fat, proteid, salts, sugar and starch, that it may well be termed the "staff of life." As it does not contain enough fat for a perfect food the addition of butter to it renders it more valuable as an article of diet. Mrs. Ellen H. Richards gives the following explanation of what constitutes ideal bread: "(1) It should retain as much as possible of the nutritive principles of the grain from which it is made; (2) it should be prepared in such a manner as to secure the complete assimilation of these nutritive principles; (3) it should be light and porous, so as to allow the digestive juices to penetrate it quickly and thoroughly; (4) it should be nearly or quite free from coarse bran, which causes too rapid muscular action to allow of complete digestion. This effect is also produced when the bread is sour." Bread is made from a combination of flour, liquid (either milk or water), and a vegetable ferment called yeast (see yeast recipes). The yeast acts slowly or rapidly according to the temperature to which it is exposed. The starch has to be changed by the ferment called diastase (diastase is a vegetable ferment which converts starchy foods into a soluble material called maltose) into sugar, and the sugar into alcohol and carbonic acid gas (carbon dioxide), when it makes itself known by the bubbles

which appear and the gradual swelling of the whole mass. It is the effect of the carbonic acid gas upon the gluten, which, when checked at the proper time before the ferment becomes acetic (sour) by baking, produces the sweet, wholesome bread which is the pride of all good housekeepers. The kneading of bread is to break up the gas bubbles into small portions in order that there may be no large holes and the fermentation be equal throughout. The loaf is baked in order to kill the ferment, to render the starch soluble, to expand the carbonic acid gas and drive off the alcohol, to stiffen the gluten and to form a crust which shall have a pleasant flavor. Much of the indigestibility of bread is owing to the imperfect baking; unless the interior of the loaf has reached the sterilizing point, 212° F., the bacteria contained in the yeast will not be killed, and some of the gas will remain in the centre of the loaf. The scientific method of baking bread is to fix the air cells as quickly as possible at first. This can be done better by baking the bread in small loaves in separate pans, thereby securing a uniform heat and more crust, which is considered to be the most easily digested part of the bread. Some cooks consider that long, slow baking produces a more desirable flavor and renders bread more digestible. One hundred pounds of flour will make an average of one hundred and thirty-five pounds of bread. This increase of weight is due to the addition of water.

BREAD.

MACARONI. Macaroni is a flour preparation of great food value. It contains about six per cent. more gluten than bread, and is regarded by Sir Henry Thompson as equal to meat for flesh-forming purposes. Dieticians say that macaroni, spaghetti and vermicelli are not used so extensively as their value deserves.

BUCKWHEAT. Buckwheat is the least important of the cereals.

RYE. Rye is almost equal to wheat in nutritive value. Its treatment in regard to bread making is similar to that of wheat.

CORN. Corn contains fat, proteid and starch, and produces heat and energy. It is very fattening, and when eaten as a vegetable is considered difficult of digestion. Cornmeal is a wholesome food; it contains more fat than wheat flour, and less mineral matter.

RICE. Rice constitutes a staple food of a great many of the world's inhabitants. It contains more starch than any other cereal, but when properly cooked is very easily digested. It should be combined with some animal food, as it contains too little nitrogen to satisfy the demands of the system. It forms a wholesome combination with fruit, such as apples, peaches, prunes, berries, etc.

BARLEY. Barley is almost equal to wheat in nutritive value. It contains more fat, mineral matter and cellulose (cellulose is often called indigestible fibre, as it resists the solvent action of the

digestive juices, and is of no value as a nutrient), and less proteid and digestible carbohydrates.

OATMEAL.

Oatmeal is one of the most valuable foods. Oats contain fat, proteid, salts and cellulose, in addition to a large percentage of starch. The nutritive value of oatmeal is great, but much depends upon the manner of cooking. (See recipes.) People who eat much oatmeal should lead a vigorous out-door life. The following analysis of oatmeal is given (Letheby):—

Nitrogenous matter	12.6 per cent.
Carbohydrates, starch, etc.	63.8 "
Fatty matter	5.6 "
Mineral matter.	3.0 "
Water	15.0 "
Total	100.0

Vegetables.

Legumes—peas, beans and lentils—have an exceedingly leathery envelope when old; and unless soaked for a long time in cold water—in order to soften the woody fibre—and are then cooked slowly for some hours, are very indigestible. Pea and bean soups are considered very nutritious. Lentils grow in France; they are dried and split, in which form they are used in soups.

POTATOES.

Potatoes are the most popular of all the tubers. As an article of diet they possess little nutritive value, being about three-fourths water. They contain some mineral matter, hence the reason why they are better boiled and baked in their

skins, so as to prevent the escape of the salts into the water. Potatoes are more easily digested when baked than cooked in any other form.

BEETS. Beets contain between 85 and 90 per cent. of starch and sugar, some salts, and a little over one per cent. of proteid matter. Young beets, either in the form of a vegetable or a salad, are considered to be very wholesome.

CARROTS, TURNIPS, PARSNIPS, OYSTER PLANT. Carrots, turnips, parsnips and oyster plant, although containing a large percentage of water, are considered valuable as nutrients, the turnip being the least nutritious.

GREEN VEGETABLES. Green vegetables do not contain much nutriment, and are chiefly valuable as affording a pleasing variety in diet; also for supplying mineral matter and some acids. In this class we may include cabbage, cauliflower, spinach, lettuce and celery.

TOMATOES. Tomatoes are wholesome vegetables; on account of the oxalic acid they contain they do not always agree with people of delicate digestion.

CUCUMBERS. Cucumbers are neither wholesome nor digestible.

ASPARAGUS. Asparagus is a much prized vegetable. The substance called asparagin which it contains is supposed to possess some value.

RHUBARB. Rhubarb is a wholesome vegetable.

ONIONS, GARLIC, SHALOTTS. Onions, garlic, and shallots are valuable both as condiments and eaten separately. They contain more nutrients than the last vegetables considered.

CHAPTER VIII.

Fruits.

Fruits are composed largely of water, with starches, a vegetable jelly, pectin, cellulose and organic acids. The most important acids in fruit are citric, malic and tartaric. Citric acid is found in lemons, limes and oranges; tartaric acid in grapes; malic acid in apples, pears, peaches, apricots, gooseberries and currants. Among the least acid are peaches, sweet apples, bananas and prunes. Strawberries are moderately acid, while lemons and currants contain the most acid of all.

Uses of Fruit.

(1) To furnish nutriment; (2) to convey water to the system and relieve thirst; (3) to introduce various mineral matter (salts) and acids which improve the quality of the blood; (4) as antiscorbutics; (5) as laxatives and cathartics; (6) to stimulate the appetite, improve digestion and provide variety in the diet. Apples, lemons and oranges are especially valuable for the potash salts, lime and magnesia they contain. Fruit as a common article of daily diet is highly beneficial, and should be used freely in season. Cooked fruit is more easily digested than raw, and when over-ripe should always be cooked in order to prevent fruit poisoning.

NUTS. Nuts contain proteid, with some starch and sugar, but are not considered valuable as nutrients. Cocoanuts, almonds and English walnuts are the most nutritious.

Beverages.

TEA. Tannin is an astringent of vegetable origin which exists in tea, is also found in coffee and wines, and is very injurious. Tea is a preparation made from the leaves of a shrub called Thea. The difference between black and green tea is due to the mode of preparation, and not to separate species of plant. Green tea contains more tannin than black. The following table will show the difference:—

	Green Tea.	Black Tea.
Crude protein	37.43	38.90
Fibre	10.06	10.07
Ash (mineral matter)	4.92	4.93
Theine	3.20	3.30
Tannin	10.64	4.89
Total nitrogen	5.99	6.22

The stimulating properties which tea possesses, as well as its color and flavor, depend upon the season of the year at which the leaves are gathered, the variety of the plant, the age of the leaves, which become tough as they grow older, and the care exercised in their preparation. Much depends upon the manner in which tea is infused. (1) Use freshly boiled water; (2) allow

it to infuse only three or four minutes, in order to avoid extracting the tannin. When carefully prepared as above, tea is not considered unwholesome for people in good health.

Coffee is made from the berries of coffee-arabica, which are dried, roasted and browned. The following table gives an approximate idea of the composition of coffee beans (Konig):— COFFEE.

Water	1.15
Fat	14.48
Crude fibre	19.89
Ash (mineral matter)	4.75
Caffeine	1.24
Albuminoids	13.98
Other nitrogenous matter	45.09
Sugar, gum and dextrin	1.66

Coffee is frequently adulterated with chicory, which is harmless. Coffee should not be allowed to boil long or stand in the coffee pot over a fire, as the tannin is extracted, which renders it more indigestible. Much controversy has been indulged in over the effect of coffee upon the system, but like many other similar questions it has not reached a practical solution. The general opinion seems to be that when properly made and used in moderation it is a valuable stimulant and not harmful to adults.

Cocoa and chocolate contain more food substances than tea or coffee, although their use in this respect is not of much value. The following table gives the analysis of cocoa (Stutzer):— COCOA.

Theobromine	1.73
Total nitrogenous substance	19.28
Fat	30.51
Water	3.83
Ash (mineral matter)	8.30
Fibre and non-nitrogenous extract	37.48

ALCOHOL. The use of alcohol is wholly unnecessary for the health of the human organism. (See Public School Physiology and Temperance.)

Condiments.

Condiments and spices are used as food adjuncts; they supply little nourishment, the effect being mainly stimulating, and are very injurious when used in excess. They add flavor to food and relieve monotony of diet. The use of such condiments as pepper, curry, pickles, vinegar and mustard, if abused, is decidedly harmful. Salt is the only necessary condiment, for reasons given in the chapter on mineral matter. The blending of flavors so as to make food more palatable without being injured is one of the fine arts in cookery. Some flavors, such as lemon juice, vinegar, etc., increase the solvent properties of the gastric juice, making certain foods more digestible.

CHAPTER IX.

Preparing Food.

The knowledge of food values and their relation to the body will be of little use for practical purposes unless combined with the knowledge of how the various foods should be prepared, either by cooking or in whatever form circumstances and the material may require. The first requisite for cooking purposes is heat; this necessitates the use of fuel. The fuels chiefly used for household purposes are wood, coal, kerosene oil and gas. Soft woods, such as pine or birch, are best for kindling and for a quick fire. Hard woods, oak, ash, etc., burn more slowly, retain the heat longer, and are better adapted for cooking purposes.

COAL. Coal (anthracite) is about 95 per cent. carbon. It kindles slowly, gives a steady heat, and burns for a longer time without attention than wood. Stoves for burning oil and gas have become popular, and are very convenient and satisfactory for cooking purposes.

OIL. Oil is considered to be the cheapest fuel.

GAS. Gas is a very satisfactory fuel for cooking purposes, but can only be used in certain localities.

Making and Care of a Fire.

Great care should be exercised in the selection of a stove or range. The plainer the range the

CARE OF A FIRE.

easier it will be to keep it clean. There should be plenty of dampers that can be used to hasten the fire or to check it. Learn thoroughly the management of the range before beginning to cook. In lighting a fire, remove the covers, brush the soot from the top of the oven into the fire-box; clean out the grate (saving all the unburned coal, and cinders). Put in shavings or paper, then kindling arranged crosswise, allowing plenty of air space between the pieces, a little hard wood and a single layer of coal. Put on the covers, open the direct draft and oven damper, then light the paper. When the wood is thoroughly kindled and the first layer of coal heated, fill the fire-box with coal even with the top of the oven. When the blue flame becomes white, close the oven damper, and when the coal is burning freely, shut the direct draft. When coal becomes bright red all through it has lost most of its heat. A great deal of coal is wasted by filling the fire-box too full and leaving the drafts open till the coal is red. To keep a steady fire it is better to add a little coal often rather than to add a large quantity and allow it to burn out. Never allow dust or cinders to accumulate around a range, either inside or out. Learn to open and shut the oven door quietly and quickly. Study the amount of fire required to heat the oven to the desired temperature. Learn which is the hotter or cooler side of the oven, and move the article which is being baked as required, being very careful to move it gently.

Measurements.

Accurate measurement is necessary to insure success in cooking. As there is such a diversity of opinion as to what constitutes a heaping spoonful, all the measurements given in this book will be by level spoonfuls. A cupful is all the cup will hold without running over, and the cup is one holding ½ pint.

The following table may be used where scales are not convenient:—

4 cups of flour	=	1 pound or 1 quart.
2 cups of solid butter	=	1 "
½ cup butter	=	¼ "
2 cups granulated sugar	=	1 "
2½ cups powdered sugar	=	1 "
3 cups meal	=	1 "
1 pint of milk or water	=	1 "
1 pint chopped meat, packed solidly	=	1 "
9 large eggs, 10 medium eggs	=	1 "
2 level tablespoonfuls butter	=	1 ounce.
4 " " "	=	2 ounces or ¼ cup.
Butter the size of an egg	=	2 " " "
2 level tablespoonfuls sugar	=	1 "
4 " " flour	=	1 "
4 " " coffee	=	1 "
4 " " powdered sugar	=	1 "

Table of Abbreviations.

Saltspoon ssp.	Teaspoon tsp.
Tablespoon tbsp.	Cupful cf.
Pint pt.	Quart qt.
Gallon gal.	Peck pk.

A speck (spk.) is what you can put on a quarter inch square surface.

Time-table for Cooking.

Baking Bread, Cakes and Puddings.

Loaf bread	40 to 60 m.	Rolls, biscuit	10 to 20 m.
Graham gems	25 to 30 m.	Gingerbread	25 to 30 m.
Sponge cake	45 to 60 m.	Fruit cake	2 to 3 hrs.
Cookies	10 to 15 m.	Bread pudding	1 hr.
Rice and tapioca	1 hr.	Indian pudding	2 to 3 hrs.
Custards	15 to 20 m.	Steamed pudding	1 to 3 hrs.
Pastry (thin puff)	10 to 15 m.	Pastry (thick)	30 to 50 m.
Pie crust	25 to 30 m.	Potatoes	30 to 45 m.
Baked beans	6 to 8 hrs.	Braised meat	3 to 4 hrs.
Scalloped dishes	15 to 20 m.		

Baking Meats.

Beef, sirloin, rare, per lb	8 to 10 m.
Beef, well done, per lb	12 to 15 m.
Beef, rolled rib or rump, per lb	12 to 15 m.
Beef, fillet, per lb	20 to 30 m.
Mutton, rare, per lb	10 m.
Mutton, well done, per lb	15 m.
Lamb, well done, per lb	15 m.
Veal, well done, per lb	20 m.
Pork, well done, per lb	30 m.
Turkey, 10 lbs. weight	2½ hrs.
Chicken, 3 to 4 lbs. weight	1 to 1½ hr.
Goose, 8 lbs.	2 hrs.
Tame duck	1 to 1½ hr.
Game	40 to 60 m.
Grouse	30 to 40 m.
Small birds	20 to 25 m.
Venison, per lb	15 m.
Fish, 6 to 8 lbs	1 hr.
Fish, small	30 to 40 m.

Vegetables (Boiling).

Rice, green corn, peas, tomatoes, asparagus (hard boiled eggs)	20 to 25 m.
Potatoes, macaroni, squash, celery, spinach	25 to 30 m.
Young beets, carrots, turnips, onions, parsnips, cauliflower	30 to 45 m.
Young cabbage, string beans, shell beans, oyster plant	45 to 60 m.
Winter vegetables, oatmeal, hominy and wheat	1 to 2 hrs.

Frying (Deep).

Smelts, croquettes, fish balls	1 to 2 m.
Muffins, fritters, doughnuts	4 to 6 m.
Fish, breaded chops	5 to 7 m.

Broiling.

Steak, 1 inch thick	6 to 8 m.	Fish, thick	12 to 15 m.
Steak, 1½ inch thick.	8 to 10 m.	Chops	8 to 10 m.
Fish, small	6 to 8 m.	Chicken	20 m.

Table of Proportions.

1 qt. of liquid to 3 qts. of flour for bread.
1 qt. of liquid to 2 qts. of flour for muffins.
1 qt. of liquid to 1 qt. of flour for batters.
1 cup of yeast (1 yeast cake) to 1 qt. of liquid.
1 tsp. of soda (level), 3 of cream tartar to 1 qt. of flour.
1 tsp. of soda to 1 pt. of sour milk.
1 tsp. of soda to 1 cup of molasses.
4 tsps. of baking powder to 1 qt. of flour.
1 tsp. of salt to 1 qt. of soup stock.
1 ssp. of salt to 1 loaf of cake.
1 tbsp. of each vegetable, chopped, to 1 qt. of stock.
1½ tbsp. of flour to 1 qt. of stock for thickening soup.
1 tbsp. of flour to 1 pt. of stock for sauces.
1 tsp. of salt to 1 pt. of stock for sauces.
4 tbsps. (level) cornstarch to 1 pt. of milk (to mould).
1 tsp. of salt to 2 qts. of flour for biscuits, etc.

Methods for Flour Mixtures.

STIRRING. Stirring is simply blending two or more materials by moving the spoon round and round until smooth and of the proper consistency.

BEATING. Beating is bringing the spoon up through the mixture with a quick movement so as to entangle as much air as possible.

CUTTING OR FOLDING. Cutting or folding is adding the beaten white of egg to a mixture without breaking the air bubbles, by lifting and turning the mixture over and over as in folding. Do not stir or beat.

RECIPES.

BATTERS, BISCUITS AND BREAD.

Popovers.

2 cups of flour.	2 cups of milk.
3 eggs.	½ tsp. salt.

Beat the eggs (without separating) until very light, then add the milk and salt; pour this mixture on the flour (slowly), beating all the while. Beat until smooth and light, about five minutes. Grease gem pans or small cups, and bake in a moderately hot oven about thirty-five minutes. They should increase to four times their original size. (This recipe may be divided for class work.)

Pancakes.

1 pint of flour.	2 eggs.
1 tbsp. of melted butter.	2 tsps. baking powder.
1 pint of milk.	½ tsp. salt.

Beat the whites and yolks of the eggs separately; add the yolks to the milk, then the melted butter; salt. Sift the baking powder and flour together, add slowly to the liquid, stir until smooth. Lastly, add the whites of the eggs. These may be cooked in waffle irons or on a griddle.

Pancakes with Buttermilk.

1 pint of buttermilk.	½ tsp. salt.
Flour to make a medium batter.	½ tsp. soda.

Crush the soda, add it and the salt to the buttermilk, add the flour gradually, beat until the batter is smooth, and bake on a hot griddle. An egg may be added.

Cornmeal Griddle Cakes.

1 pint of Indian meal.
1 cup of flour.
1 tsp. salt.
3 eggs.
4 (l.) tsps. baking powder.
1 pint of milk.

Put the meal into a bowl, and pour over it just enough boiling water to scald it; do not make it soft; let stand until cool. Then add the milk; beat the eggs until very light, add them to the batter, add the flour and salt in which the baking powder has been sifted. Mix well, beat vigorously for a minute or two, and bake on a hot griddle.

Bread Griddle Cakes.

1 pt. of milk.
½ tsp. of salt.
½ tsp. of soda and 1 tsp. cream tartar.
3 (l.) tsps. baking powder.
½ pt. stale bread crumbs.
2 eggs.
Flour to make a thin batter.

Soak the bread in the milk for one hour, then beat it smooth. Beat the eggs separately till very light, add first the yolks, then the flour and salt and baking powder. Beat again, add the whites, and bake quickly on a hot griddle.

Buckwheat Cakes.

1 pt. boiling water.
½ tsp. salt.
½ cup white flour.
1 ssp. soda.
½ cup corn or Graham meal.
¼ yeast cake.
1 cup buckwheat flour.

Pour the boiling water on the corn or Graham meal, add the salt, and when lukewarm add the flour, beat until smooth, then add the yeast. Let it rise over night. In the morning add the soda just before baking (milk may be used instead of water). A tablespoonful of molasses is sometimes added in order to make the cakes a darker brown.

Fritters.

Beat two eggs together until light, add to them 1 cup of milk, ½ tsp. salt and sufficient flour to make a batter that will drop from the spoon. Beat until smooth. Have ready a deep pan of hot fat; add 3 (l.) tsps. of baking powder to the batter, mix thoroughly and drop by spoonfuls into the hot fat. When brown on one side turn and brown on the other; take out with a skimmer and serve very hot. Do not pierce with a fork as it allows the steam to escape and makes the fritter heavy.

Gems—Whole Wheat or Graham Gems.

2 cups of whole wheat flour.
½ tsp. salt.
1 tbsp. sugar.
2 eggs, beaten separately.
1 cup milk.
1 cup water.

Mix flour, salt and sugar. Beat the eggs until light, add the milk and water, stir this into the dry mixture. Bake in hot gem pans for 30 minutes.

Corn Muffins.

1 cup cornmeal.
1 cup flour.
1¼ cups milk.
2 tbsps. butter.
2 tbsps. sugar.
½ tsp. salt.
2½ tsps. baking powder.
1 egg.

Mix all the dry ingredients together. Melt the butter in a hot cup. Beat the egg till light. Add the milk to it and turn this mixture into the bowl containing the dry ingredients. Add the melted butter and beat vigorously and quickly. Pour into buttered muffin or gem pans, and bake for one-half hour in a moderate oven.

Quick Muffins or Gems.

1 pt. of milk.
1 oz. butter.
3 cups of flour.
4 tsps. baking powder.
1 tsp. salt.
3 eggs.

Beat the eggs separately till light, add the yolks to the milk, then the flour, which must be more or less, according to the quality. The batter must be thin and pour from the spoon. Now add the melted butter and salt; give the whole a vigorous beating. Now add the baking powder and the well beaten whites, stir till thoroughly mixed. Bake in muffin rings in a quick oven or on the griddle.

Tea Biscuit.

1 pt. of flour.
1 cup milk.
2½ tsps. baking powder.
½ tsp. salt.
1 tbsp. lard or butter.
½ tsp. sugar.

Mix thoroughly in a sieve the flour, sugar, salt and baking powder, and rub through the sieve. Rub the butter or lard into this mixture. Now add the milk, stirring quickly with a strong spoon. Sprinkle the board with flour, turn out the dough upon it. Roll to the thickness of about ½ inch, cut with a small cutter. Bake in a quick oven. Do not crowd the biscuit in the pan. They should bake from 10 to 15 minutes. (All biscuit doughs should be mixed as soft as it is possible to handle. Sour milk may be used in this recipe by substituting soda for the baking powder.)

Hot Corn Bread.

1 qt. of cornmeal.
1 tsp. of salt.
1 pt. sour milk or buttermilk.
1 oz. of butter.
2 eggs.
1 tsp. of soda.

Put the cornmeal in a large bowl and pour over it just enough boiling water to scald it through. Let it stand until cold, then add the eggs well beaten, the milk or buttermilk, salt, and butter (melted); beat thoroughly. Dissolve the soda in two tbsps. of boiling water, stir into

the mixture, turn quickly into a greased square, shallow pan, put into a hot oven and bake 40 minutes.

Shortcakes.

(Suitable for strawberries or any sweetened fruit.)

1 pint flour.
1 cup sweet or sour milk.
¼ cup butter.
2½ tsps. baking powder, or ½ tsp. soda and 1 tsp. cream tartar.
½ tsp. salt.

Mix the salt, soda, cream tartar or baking powder with the flour, sift; rub in the butter until fine like meal. Add the liquid gradually, mixing with a knife, and use just enough to make it of a light spongy consistency. Turn the dough out on a well floured board, pat lightly into a flat cake and roll gently till half inch thick. Bake either in a spider or pie plate in the oven; split, butter, and spread with the fruit.

Doughnuts.

1 egg.
1 tbsp. melted butter.
½ tsp. salt.
1 tsp. cream tartar.
½ cup sugar.
1 cup milk.
½ tsp. soda.
1 ssp. cinnamon.
Flour enough to make into a soft dough.

Mix all the dry ingredients, beat the egg until light, add to this the milk, sugar and melted butter. Pour into the flour, mixing carefully into a soft dough. Have the board well floured. Roll only a large spoonful at a time. Cut into the desired shape and drop into hot fat. The fat should be hot enough for the dough to rise to the top instantly.

BREAD.

As bread is one of the most important articles of the daily diet, it naturally follows that special attention should be given to a subject upon which the health of the family, to a great extent, depends. A knowledge of the chemical changes and their effect (see Chap. VII) must be understood before proficiency in bread-making can be attained. The first element to consider is the *yeast*, and the generating of carbonic acid gas, so as to have the bread light, tender, and porous.

Yeast is a plant or vegetable growth produced from grain which has commenced to bud or sprout, and which forms the substance called diastase. This substance has the power to convert starch into sugar. (See Chap. VII for effect of yeast upon flour.)

The temperature at which fermentation takes place, and when to check it, are important features of bread-making.

The liquid (milk or water) should be tepid when mixed, as too great heat destroys the growth of the yeast. The dough should rise in a temperature of 75°. After fermentation has become active the temperature may be gradually lowered—as in setting bread over night—without injury.

Avoid a cold draft or sudden change of temperature, as it checks fermentation and affects the flavor.

Never allow bread to rise until it "settles," or runs over the side of the bowl. The usual rule is to let it rise until it is double in bulk, both in the bowl and after it is put into the pans. If it is not convenient to bake the bread when ready, it may be kneaded again and kept

in a cool place, to prevent souring. Bread should be mixed in a stone or granite bowl.

The only necessary ingredients for bread are water, flour, salt, and yeast. Sugar may be added to restore the natural sweetness of the flour which has been lost during fermentation, but it is not necessary. If milk is used, and the bread well kneaded, no other shortening is required; but with water, the addition of a little butter or dripping makes the bread more tender, therefore it is more easily penetrated by the digestive fluids. Tough, leathery bread is not easily digested, no matter how light it may be. As already stated, by the action of heat the ferment is killed, the starch-grains ruptured, the gas carried off, and the crust formed. In order that bread may be thoroughly cooked, and plenty of crust formed, each loaf should be baked in a pan about 4 inches deep, 4 to 6 inches wide, and from 8 to 12 inches long. Smaller loaves are even more desirable. It is very difficult to bake a large loaf so as to insure the escape of all the carbonic acid gas, and to cook the starch sufficiently without injuring the crust, besides entailing an unnecessary waste of fuel. The custom of baking several loaves together in one large pan is contrary to all scientific rules of bread-making. The oven should be hot enough to brown a spoonful of flour in five minutes, for bread. The dough should rise during the first fifteen minutes, then begin to brown; keep the heat steady for the next fifteen or twenty minutes, then decrease it. If the oven is too hot a hard crust will form and prevent the dough from rising, which will not only cause the bread to be heavy, but will prevent the gas from escaping. If, on the other hand, the oven is not hot

enough, the bread will go on rising until it becomes sour. A loaf, the size already mentioned, should take from fifty-five to sixty minutes to bake, and should give a hollow sound, if tapped, when removed from the oven. Better take too long than not long enough, as doughy bread is most objectionable and unwholesome. If the crust is beginning to burn, cover the loaf with brown paper, and reduce the heat, but have a brown crust, not a whity-brown, which is usually hard and without flavor. Upon removing the loaves from the pans, place them on a rack, where the air may circulate freely. Never leave warm bread on a pine table, or where it will absorb odors.

Bread Made with Water.

2 quarts flour.
1 tbsp. sugar.
1 pint lukewarm water.
1 tsp. salt.
1 tbsp. butter, dripping or lard.
½ cake compressed yeast, dissolved in ½ cup water.

(This recipe is for Manitoba flour. A little more fine flour would be necessary.)

Sift the flour. Put the salt, sugar and butter into a large bowl, pour on the warm water, stir until they are dissolved. Add the flour gradually until it forms a thin batter, then add the yeast; beat vigorously for at least five minutes. Add more flour until the dough is stiff enough to knead. Turn out on the board and knead for half hour. Cover and let rise until double its bulk. Form into separate loaves, put into the pans, cover, and let rise again till double its bulk. Bake in a hot oven about an hour. (Milk or half milk may be substituted in this recipe.)

Bread (with a sponge).

1 tbsp. butter.
1 tbsp. sugar.
½ cup yeast or ½ yeast cake.
1 tsp salt.
1 pt. water.
About 2 qts. flour.

Put the butter, sugar and salt in the mixing bowl, add ¼ cup boiling water to dissolve them; then add enough lukewarm water to make a pint, 3 cups of flour, then the yeast (if the cake is used dissolve in ¼ cup tepid water). Give it a vigorous beating, cover, and let it rise over night. In the morning add flour to make it stiff enough to knead. Knead for ½ hour. Cover closely, let it rise till it doubles its bulk; shape into loaves; let it rise again in the pans; bake as directed in previous recipe.

Whole Wheat or Graham Bread.

1 pt. milk, scalded and cooled.
1 tsp. salt.
2 cups white flour.
2 tbsps. sugar.
5 or 6 cups whole wheat flour.
½ yeast cake or ½ cup yeast.

Mix in the same order as given in previous recipes. Whole wheat flour makes a softer dough, consequently does not require so much kneading, otherwise it should be treated the same as other bread, allowing it a little longer time for baking; if too moist, a cupful of white flour may be added.

Yeast.

Steep ½ cup of loose hops in 1 quart of boiling water, in a granite kettle, 5 minutes. Mix 1 cup of flour, ¼ of a cup sugar and 1 tbsp. salt. Strain the hop liquor and pour it boiling into the flour mixture. Boil 1 minute, or till thick. When cooled add 1 cup of yeast. Cover and set in a warm place until foamy, which will be in 4 or 5

hours. Pour into stone jars, which should be not more than half full, and keep in a cool place. (Three boiled potatoes may be mashed smoothly and added to this yeast if desired.)

SAUCES AND MILK SOUPS.

White Sauce.

(For Vegetables, Eggs, etc.)

1 pt. milk.
4 (l.) tbsps. flour.
½ ssp. white pepper.
2 tbsps. butter.
½ tsp. salt.

Heat the milk over hot water. Put the butter in a granite saucepan and stir till it melts, being careful not to brown. Add the dry flour, and stir quickly till well mixed. Add the milk gradually, stirring carefully (especially from the sides) until perfectly smooth. Let it boil until it thickens, then add salt and pepper.

In using this sauce for creamed oysters, add ½ tsp. of celery salt, a few grains of cayenne pepper, and a tsp. of lemon juice.

Drawn Butter Sauce.

1 pt. hot water or stock.
½ cup butter.
½ ssp. pepper.
4 (l.) tbsps. flour.
½ tsp. salt.

Put the butter in the saucepan; when melted add the dry flour, and mix well. Add the hot water or stock a little at a time, and stir rapidly till it thickens; when smooth add the salt and pepper. Be careful to have all

sauces free from lumps. (Hard boiled eggs may be added to this sauce for baked or boiled fish. Two tbsps. of chopped parsley may be added if parsley sauce is desired.)

Brown Sauce.

1 pt. hot stock.
2 tbsps. butter.
½ tsp. salt.
1 tbsp. lemon juice.
2 tbsps. minced onions.
4 tbsps. flour.
½ ssp. pepper.
Caramel enough to color.

Mince the onion and fry it in the butter 5 minutes. Be careful not to burn it. When the butter is browned add the dry flour, and stir well. Add the hot stock a little at a time; stir rapidly until it thickens and is perfectly smooth. Add the salt and pepper. Simmer 5 minutes, and strain to remove the onion.

Caramel for Coloring Soups and Sauces.

Melt 1 cup of sugar with 1 tbsp. of water in a frying-pan. Stir until it becomes of a dark brown color. Add 1 cup of boiling water, simmer 10 minutes, and bottle when cool. This coloring is useful for many purposes, and is more wholesome than browned butter.

Mock Bisque Soup.

1 pt. stewed tomatoes.
2 tbsps. flour.
½ tsp. soda.
1 tsp. salt.
1 pt. milk.
2 tbsps. butter.
¼ tsp. pepper.

Reserve ½ cup of the milk, put the remainder on to cook in a stew-pan. Mix the flour with the cold milk,

and stir into the boiling milk. Cook for 10 minutes, then add the salt, pepper and butter. Stir the soda into the hot tomatoes and stir ½ minute, then rub through a strainer. Add the strained tomatoes to the thickened milk, and serve at once.

Potato Soup.

4 potatoes, medium size.
2 tbsps. minced celery.
2 tbsps. of flour.
¼ tsp. of pepper.
½ tsp. minced parsley.
1½ pints of milk.
4 tbsps. minced onions.
1 tsp. of salt.
1 tbsp. of butter.

Pare the potatoes, place on the fire in enough boiling water to cover, and cook for 30 minutes. Reserve ½ cup milk, put the remainder in the double boiler with the onion and celery and place on the fire. Mix the cold milk with the flour and stir into the boiling milk. When the potatoes are cooked pour off the water, mash them until fine and light. Gradually beat into them the milk; now add salt, pepper and butter, and rub the soup through a sieve. Return to the fire and add the minced parsley; simmer for 5 minutes and serve immediately. (The parsley may be omitted and celery salt substituted for the minced celery.)

Celery Soup.

1 head celery.
1 pint milk.
1 tbsp. butter.
½ tsp. salt.
1 pint water.
1 tbsp. chopped onion.
2 tbsps. flour.
½ ssp. pepper.

Wash and scrape the celery, cut into ½ inch pieces, put it into the pint of boiling salted water and cook until

very soft. Mash in the water in which it was boiled. Cook the onion with the milk in a double boiler 10 minutes and add it to the celery. Rub all through a strainer and put on to boil again. Melt the butter in a saucepan, stir in the flour and cook until smooth, but not brown, then stir it into the boiling soup. Add the salt and pepper; simmer 5 minutes and strain into the tureen. Serve very hot.

EGGS.

While eggs are nutritious and valuable as food they should not be used too freely, as they are a highly concentrated form of food. The albumen (white) of egg is one of the most valuable tissue builders. Much depends upon the manner in which they are cooked. Eggs fried in fat or hard boiled are very indigestible. Do not use an egg until it has been laid some hours, as the white does not become thick till then and cannot be beaten stiff. Eggs should be kept in a cool dark place, and handled carefully in order to avoid mixing the white and yolk, which causes the egg to spoil quickly.

Boiled Eggs.

Have the water boiling in a saucepan. Put in the eggs and move to the back of the stove where the water will keep hot, about 175 or 180 F., for from 8 to 10 minutes. If the back of the stove is too hot, move to the hearth. The white should be of a soft, jelly-like consistency, the yolks soft but not liquid. An egg to be cooked soft should never be cooked in boiling water.

Hard Boiled Eggs.

Cook eggs for 20 minutes in water just below the boiling point. The yolk of an egg cooked 10 minutes is tough and indigestible; 20 minutes will make it dry and mealy, when it is more easily penetrated by the gastric fluid.

Poached Eggs.

Have a clean, shallow pan nearly full of salted and boiling water. Remove the scum and let the water just simmer. Break each egg carefully into a saucer and slip it gently into the water. Dip the water over it with the end of the spoon, and when a film has formed over the yolk and the white is like a soft jelly, take up with a skimmer and place on a piece of neatly trimmed toast. This is the most wholesome way of cooking eggs for serving with ham or bacon.

Omelet.

Beat the yolks of two eggs, add two tbsps. of milk, 1 ssp. of salt and $\frac{1}{4}$ of a ssp. of pepper. Beat the whites till stiff and dry. Cut and fold them into the yolks till just covered. Have a clean, smooth omelet pan (or spider). When hot, rub well with a teaspoonful of butter; see that the butter is all over the pan, turn in the omelet and spread evenly on the pan. Cook until slightly browned underneath, being careful not to let it burn; set in a hot oven until dry on top. When dry throughout, run a knife round the edge, tip the pan to one side, fold the omelet and turn out on a hot platter. This may be

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made by beating the whites and yolks together for a plain omelet. A little chopped parsley, a little fine grated onion, a tbsp. or two of chopped ham, veal or chicken may be spread on the omelet before folding.

Cup Custards.

1 pt. of milk.	2 eggs.
¼ cup of sugar.	½ ssp. grated nutmeg.

Beat the eggs until light, then add the sugar; beat again, add the milk and nutmeg, stir until the sugar is dissolved. Pour into custard cups, stand the cups in a pan of boiling water and then put the pan in the oven. Bake until the custards are set, or until a knife may be slipped into the centre without anything adhering to it. When done, take them out of the water and stand away to cool. (This custard may be poured into a baking dish and baked in a quick oven until firm in the centre.)

Boiled Custard.

1 pt. of milk.	2 eggs.
2 tbsps. sugar.	½ tsp. vanilla.

Put the milk on in the double boiler, beat the sugar and yolks of eggs together until light, then stir them into the boiling milk; stir until it begins to thicken, then take it from the fire; add the vanilla and stand aside to cool. When cool, pour into a glass dish. Beat the whites until stiff, add three tbsps. of powdered sugar gradually. Heap them on a dinner plate and stand in the oven a moment until slightly brown, then loosen from the plate, slip off gently on top of the custard; serve very cold.

FRUIT.

If people would only realize the value of fruit in its natural state, much of the time devoted to the preparation of pies, puddings, etc., would be saved. All uncooked fruit should be thoroughly ripe and served fresh and cold. Sometimes fruit is more easily digested when the woody fibre has been softened by cooking than when in its natural state, therefore a few simple recipes for cooking fruit are given.

Applesauce.

Pare, core and quarter 6 or 8 tart apples. Make a syrup with ½ cup of sugar, ½ cup of water, and a little grated lemon peel. When boiling, add the apples and cook carefully till they are just tender, but not broken. Remove them carefully, boil the syrup down a little and pour it over the apples. (For serving with roast goose, etc., cook the apples in a little water, mash until smooth, add sugar to taste.)

Coddled Apples.

Pare tart apples of uniform size; remove the cores without breaking the apples. Stand them in the bottom of a granite kettle, sprinkle thickly with sugar, cover the bottom of the kettle with boiling water, cover closely and allow the apples to steam on the back part of the stove till tender. Lift carefully without breaking, pour the syrup over them and stand away to cool (delicious served with whipped cream).

Stewed Prunes.

Wash carefully and soak in water an hour before cooking, put them into a porcelain or granite kettle, cover with boiling water and let them simmer until tender. Add a tbsp. of sugar for each pint of prunes, and boil a few moments longer.

Cranberries.

Put 1 pint of cranberries in a granite saucepan, 1 cup of sugar, 1 cup of water. After they begin to boil cook 10 minutes, closely covered. (This may be pressed through a sieve while hot, removing the skins, if desired for a mould.)

Stewed Rhubarb.

Wash the rhubarb (if young and tender it will not be necessary to remove the skin), cut into pieces about 1 inch long. To every lb. of rhubarb allow 1 lb. of sugar. Put the rhubarb into a porcelain or granite kettle, cover with the sugar, and stand on the back part of the fire until the sugar melts. Move forward, let simmer for a few minutes without stirring, turn it out carefully to cool.

Baked Pears.

Take large, sweet pears, wipe them but do not remove the stems. Stand them in an earthen baking dish, pour around them a cup of boiling water, add 2 tbsps. sugar, cover with another dish and bake slowly until the pears are tender, basting occasionally with the liquor. When done, stand away to cool in the dish in which they were baked. When cold put them into a glass dish, pour the liquor over them and serve.

Baked Apples.

Pare and core, without breaking, tart apples. Put them into a shallow earthen dish, fill the cavities with sugar, add water to cover the bottom of the dish. Bake in a quick oven till soft, basting often with the syrup. (Quinces may be baked in the same way.)

VEGETABLES.

Vegetables should be used very freely, as they contain saline substances which counteract the effect of too much meat, and are the chief source of mineral supply for the body. In cooking vegetables, a common rule is to add salt, while cooking, to all classes growing above ground (including onions), and to omit salt in the cooking of vegetables growing underground. In cooking vegetables care must be taken to preserve the flavor, and to prevent the waste of mineral matter.

Cabbage.

Cut a small head of cabbage in quarters, soak in cold water 1 hour, drain and shake dry. Remove the stalk, or hard part, and chop the remainder rather fine. Put it into a stew-pan with enough boiling water to cover, and boil 20 minutes. Drain in a colander. Turn into a hot dish, and pour over it cream sauce or a little melted butter, pepper and salt.

Cauliflower.

Pick off the outside leaves, soak in cold salted water, top downwards, for 1 hour. Tie it round with a piece of

twine to prevent breaking. Cook in boiling salted water until tender, remove the string, turn into a hot dish with the top up, cover with cream sauce or drawn butter sauce. (When cold, it may be picked to pieces and served in a salad.)

Celery.

Scrape clean and cut the stalks into 2-inch pieces; cook in salted water until tender, drain and cover with a white sauce. The sauce should be made with the water in which the celery has been stewed.

Boiled Beets.

Wash, but do not cut them, as that injures the color. Cook in boiling water until tender. When cooked put them into a pan of cold water and rub off the skins. They may be cut in slices and served hot with pepper, butter and salt, or sliced, covered with vinegar, and served cold. They may be cut into dice and served as a salad, either alone or mixed with potatoes and other vegetables.

Beans (Dried).

Lima beans should be soaked in warm water over night. In the morning drain off this water and cover with fresh warm water. Two hours before needed drain, cover with boiling water and boil 30 minutes; drain again, cover with fresh boiling water, and boil until tender. Add a teaspoonful of salt while they are boiling. When cooked drain them, add a little butter, pepper and salt, or a cream sauce.

Asparagus.

Wash the asparagus well in cold water, reject the tough parts, tie in a bunch or cut into pieces 1 inch long. Put it in a kettle, cover with boiling water, and boil until tender. Put it in a colander to drain. Serve with melted butter, pepper and salt, or with a cream or drawn butter sauce.

Onions.

Scald in boiling water, then remove the skins. Put them in boiling salted water; when they have boiled 10 minutes, change the water. Boil until tender but not until broken. Drain and serve with either cream sauce or butter, pepper and salt.

Potatoes.

Wash and scrub with a brush. If old, soak in cold water after paring. Put them in boiling water, when about half cooked add a tbsp. of salt. Cook until soft but not broken. Drain carefully. Expose the potatoes for a minute to a current of air, then cover and place on the back of the stove to keep hot, allowing the steam to escape.

Rice Potatoes.

Press the cooked potatoes through a coarse strainer into the dish in which they are to be served.

Mashed Potatoes.

To 1 pint of hot boiled potatoes, add 1 tbsp. butter, ½ tsp. of salt, ½ ssp. of white pepper and hot milk or cream to moisten. Mash in the kettle in which they were boiled, beat with a fork until they are light and creamy. Turn lightly into a dish.

Potato Puffs.

Prepare as for mashed potatoes, adding a little chopped parsley or celery salt if the flavor is liked. Beat 2 eggs, yolks and whites separately. Stir the beaten whites in carefully, shape into smooth balls or cones, brush lightly with the beaten yolks, and bake in a moderately hot oven until brown.

Creamed Potatoes.

Cut cold boiled potatoes into thin slices. Put them in a shallow pan, cover with milk and cook until the potatoes have absorbed nearly all the milk. To 1 pint of potatoes, add 1 tbsp. of butter, ½ tsp. of salt, ½ ssp. of pepper and a little chopped parsley or onion.

Baked Potatoes.

Select smooth potatoes of uniform size, wash and scrub well. Bake in a hot oven about 45 minutes or until soft. Break the skin or puncture with a fork to let the steam escape and serve at once. This is the most wholesome method of cooking potatoes, as the mineral matter is retained.

Fried Potatoes.

Pare, wash and cut into slices or quarters. Soak in cold salted water, drain and dry between towels. Have sufficient fat in a kettle to more than cover the potatoes. When it is very hot drop the potatoes in, a few at a time, so as not to reduce the heat of the fat too quickly. When brown, which should be in about 4 or 5 minutes for quarters and about 2 minutes if sliced, drain and sprinkle with salt.

Tomatoes (Raw).

Scald and peel sometime before using, place on ice, and serve with salt, sugar and vinegar, or with a salad dressing.

Scalloped Tomatoes.

Scald and peel as many tomatoes as required. Butter a deep dish and sprinkle with fine bread or cracker crumbs, then a layer of sliced tomato, over this sprinkle a little salt, pepper and sugar; then add a layer of bread crumbs, another of tomatoes, sprinkle again with salt, pepper and sugar: put bread crumbs on the top, moisten with a little melted butter, and bake until brown.

Stewed Tomatoes.

Pour boiling water over the tomatoes, remove the skins and the hard green stem, cut into quarters or slices and stew in a granite kettle until the pulp is soft, add salt, pepper, butter and a little sugar if desired. If too thin the tomato may be thickened with crumbs or corn-starch wet in a little cold water.

Spinach.

Pick over carefully, discarding all decayed leaves. Wash thoroughly, then place in a pan of cold water, let stand for a few minutes. Drain and put in a large kettle with just enough water to keep it from burning. Cook very slowly until tender. Drain and chop fine, add 1 tbsp. of butter, a tsp. of salt, a ssp. of pepper. It may be served on toast (hot) or garnished with hard boiled eggs.

Carrots and Turnips.

Carrots as a vegetable for the table are more palatable when young and tender. They should be washed and scraped, boiled until tender, and served with butter, pepper and salt or a white sauce. Turnips contain little nutriment; having no starch, they are very suitable for eating with potatoes. They require more salt than any other vegetable, and should be served with fat meat, corned beef, roast pork or mutton. Turnips should be washed, pared, cut into slices or strips, boiled until tender. Drain, mash and season with pepper and salt.

Peas (Green).

Wash the pods, which should be green, crisp and plump, before shelling, then the peas will not require washing. Put the peas into a strainer or colander and shake out all the fine particles. Boil until tender. When nearly done add the salt. Use little water in cooking, when they may be served without draining; season with a little butter, pepper and salt. If drained, serve either dry with butter, pepper and salt, or with a white sauce.

Green Sweet Corn.

Remove the husk and silky fibre, cover with boiling water (the flavor is improved by adding a few of the clean inner husks) and cook, if young and tender, from 10 to 15 minutes. Try a kernel and take up the corn as soon as the milk has thickened and the raw taste is destroyed.

SALADS.

French Dressing.

3 tbsps. of olive oil.
¼ tsp. of salt.
1 tbsp. vinegar.
½ ssp. of pepper or speck of cayenne.

Mix these ingredients together and serve. This makes a particularly good dressing for lettuce or vegetable salads.

Salad Dressing.

½ cup vinegar.
1 tbsp. sugar.
½ tsp. salt.
½ cup cream.
2 eggs.
½ tsp. mustard.
A speck of cayenne pepper.

Beat the eggs well, mix the sugar, salt, mustard and pepper together, add to the beaten eggs, then add the vinegar. Place the saucepan on the range in a pan of boiling water. Stir constantly until the dressing becomes thick and light. Take from the fire and turn into a cold bowl at once to prevent curdling. Beat the cream to a thick froth and stir it into the cold dressing. (When cream is not available use the same quantity of milk, previously thickened to the consistency of cream with a little cornstarch, add a tsp. of butter; when cold, add to the dressing.)

Mayonnaise Dressing.

½ pt. of olive oil.
1 tsp. mustard.
½ tsp. salt.
Yolks of 2 uncooked eggs.
1 tbsp. lemon juice.
1 tbsp. vinegar.
½ tsp. sugar.
A speck of cayenne.

Put the yolks of the eggs into a cold bowl, stir in the dry ingredients, beat well, using a silver or small wooden spoon. Then add the oil, drop by drop. When the mix-

ture gets so thick that it is difficult to stir, add a few drops of the vinegar to thin it. Continue stirring in the oil and vinegar alternately until all are used, when it should be very thick; add the lemon juice last and beat for a few minutes longer; a cupful of whipped cream may be stirred into this dressing before using. (The following rules must be observed in order to insure success: (1) to beat the yolks and dry ingredients until thick; (2) to add the oil only in drops at first; (3) always beat or stir in one direction, reversing the motion is apt to curdle the dressing.)

Lettuce Salad.

Choose crisp, fresh lettuce, wash clean, let it remain for a little time in cold or ice water, drain thoroughly, break or tear the leaves into convenient pieces, dress with a French or cooked dressing; serve at once, cold.

Potato Salad.

1 pt. cold boiled potatoes.
½ tsp. salt.
½ cup cooked dressing.
1 tsp. finely chopped onion.
1 sp. pepper.
Or the French dressing, as given.

Cut the potatoes into pieces about the size of dice, mix the seasonings with the potatoes, turn into a dish in alternate layers of potatoes and dressing, having a little dressing on top. Garnish with parsley, and allow to stand at least an hour in a cold place before serving, so that the potatoes may absorb the seasoning. (Cold boiled beets cut into cubes may be added in alternate layers with the potatoes in this recipe, using a little more dressing.)

Tomato Salad.

Peel the tomatoes (without scalding) and put them on ice until very cold, have crisp leaves of lettuce which have been washed and dried. When ready to serve, cut the tomatoes in halves, place one-half on a leaf of lettuce (the curly leaves being the best), on this put a tbsp. of mayonnaise or cooked dressing, and serve immediately.

Cabbage Salad.

Cabbage or celery may be used as a salad by cutting rather fine, allowing it to get cold and crisp, and serving with a cooked or French dressing. Indeed almost any vegetable may be used for a salad. String beans, asparagus, cauliflower, which have been cooked, are suitable for salad, either alone or in combination with nasturtium, cress, hard boiled eggs, etc.

Chicken Salad.

One pint each of cold boiled or roasted chicken and celery. Cut the chicken into $\frac{1}{4}$-inch dice, scrape, wash and cut the celery into dice, put the celery in a napkin and lay on the ice for 10 or 12 minutes; season the chicken with vinegar, salt, pepper and oil (or the French dressing-oil may be omitted if the flavor is not agreeable, substituting cream or melted butter). Add the celery to the seasoned chicken, add half the dressing (using either a cooked or mayonnaise), heap in a dish, add the remainder of the dressing, garnish with the tiny bleached celery leaves or small curly lettuce leaves. (A few capers and a hard boiled egg may be used as a garnish if desired.)

In summer the chicken may be served on a tender lettuce leaf, adding a spoonful of dressing, and serving very cold.

Fruit Salad.

4 oranges.
1 cup water.
¼ package gelatine.
4 bananas.
Juice of 2 lemons.
1½ cup sugar.

Dissolve the gelatine in the water, add the sugar and lemon juice, strain and pour over the oranges and bananas, which have been peeled and sliced and placed in alternate layers in a mould. Set away to cool. When needed, turn out and serve. Garnish with Malaga grapes, cherries, currants, or any suitable fruit.

CEREALS.

All cereals require thorough cooking, because of the starch in them, also to soften the woody fibre. No matter what the cereal product may be, it should be cooked not less than three-quarters of an hour, and better if cooked longer.

Oatmeal Porridge.

1 pt. of boiling water.
½ cup of oatmeal.
½ tsp. salt.

Be sure to have the water boiling. Sprinkle in the oatmeal slowly, stirring all the time. Add the salt, and move back or set in a vessel of boiling water where it will cook gently for 1 hour. Do not stir the porridge after the first 5 minutes.

All porridge (or mush) is made on the same principle.

Cracked Wheat

Should be cooked at least 4 or 5 hours.

Cornmeal

Should be cooked an hour or more.

Rice.

Wash 1 cup of rice. Have 2 quarts of water, with 1 tbsp. salt, boiling rapidly. Sprinkle in the rice gradually, when you have it all in cover the kettle and boil 20 minutes. If too thick add a little boiling water. Test the grains, and the moment they are soft, and before the starch begins to cloud the water, pour into a colander to drain. Stand it in the oven a few minutes to dry, leaving the door open. Turn carefully into a heated dish and serve without a cover. (Do not stir the rice while cooking.)

Rice Croquettes.

1 pint of milk.
4 (l.) tbsps. of sugar.
½ cup raisins.
½ cup of rice.
½ tsp. vanilla.
Yolks of two eggs.

Wash the rice and put it into the boiling milk in a double boiler. Cook until very thick; add the yolks of the eggs and the sugar, beat thoroughly. Take from the fire, add the vanilla and the fruit, which has been well floured. Turn out on a dish to cool, when cold form in pyramids or cylinders; dip first in beaten egg, then in fine bread crumbs and fry in deep, boiling fat. Put a little jelly on the top of each croquette, dust the whole with powdered sugar, and serve with vanilla sauce or cream and sugar.

Baked Rice.

Wash ½ cup of rice, turn into a buttered pudding dish, add 2 tbsps. sugar, grate ¼ of a small nutmeg, add 1 qt. of milk, bake slowly for at least 1½ hour.

Farina.

1 pint of milk. | 3 level tbsps. of farina.

Put the milk in the double boiler, when the milk boils add the salt, then sprinkle in the farina, stirring all the while; beat the mixture well and cook for 30 minutes. Serve with cream and sugar. (This may be made into a pudding by adding an egg, 2 tbsps. sugar, ½ tsp. vanilla, baking in the oven until brown.)

MACARONI.

Macaroni is quite as valuable as bread for food, and should be used very freely.

Boiled Macaroni.

Break the macaroni in pieces about 2 inches long. Have boiling water, add a tsp. of salt; throw in the macaroni and boil rapidly 30 minutes, put it into a colander to drain, return to the kettle, rub a tbsp. of butter and flour together until smooth, add either milk or water until the sauce is as thick as rich cream. Cook it a few minutes before pouring over the macaroni, and serve (add salt to taste).

Macaroni with Tomato Sauce.

¼ lb. macaroni.
1 tbsp. butter.
Salt and pepper to taste.
1 tbsp. flour.
1 cup stewed tomatoes.

Hold the long sticks of macaroni in the hand; put the end into boiling salted water, as it softens bend and coil in the water without breaking. Boil rapidly 20 minutes. When done put it in a colander to drain. Put the butter in a saucepan to melt, add to it the flour, mix until smooth, then add the tomatoes (which have been strained), stir carefully until it boils. Pour over the hot macaroni and serve at once.

Macaroni and Cheese.

¼ lb. of macaroni.
¼ lb. grated cheese.
Salt and white pepper to taste.
½ pt. milk.
1 tsp. butter.

Break the macaroni in pieces about 3 inches long. Put it into plenty of boiling water. Add 1 tsp. salt and boil rapidly 25 minutes; drain, throw into cold water to blanch for 10 minutes. Put the milk into the double boiler, add to it the butter, then the macaroni which has been drained, and cheese; stir until heated, add the salt and pepper, and serve. (The macaroni may be placed in a baking dish in alternate layers with the cheese, sprinkling each layer with pepper and salt, pouring the milk over the top, cutting the butter in small bits distributed over the top, and bake until brown in a moderately quick oven.)

CHEESE.

Cheese Souffle.

¼ lb. of cheese.
1 ssp. of soda.
A speck of cayenne.
2 tbsps. flour.
½ cup of milk.
1 tsp. mustard.
2 eggs.
2 tbsps. butter.

Put the butter in a saucepan, when melted stir in the flour, add the milk slowly, then the salt, mustard and cayenne, which have been mixed together. Add the yolks of the eggs which have been well beaten, then the grated cheese; stir all together, lift from the fire and set away to cool. When cold, add the stiff beaten whites, turn into a buttered dish and bake 25 or 30 minutes. Serve immediately.

Welsh Rarebit.

¼ lb. cheese.
1 tsp. mustard.
A speck of cayenne.
1 tsp. butter.
¼ cup cream or milk.
½ tsp. salt.
1 egg.

Grate the cheese, put it with the milk in the double boiler. While this is heating, make some toast. Mix the mustard, salt and pepper, add the egg and beat well. When the cheese has melted, stir in the egg and butter, and cook about two minutes, or until it thickens a little, but do not let it curdle. Pour it over the hot toast and serve at once.

BEVERAGES.

Tea.

In making tea, the following rules should be observed. The water should be freshly boiled. The teapot, which should be of earthen or china (never of tin), should be scalded and heated before putting in the tea. Pour on the boiling water and cover closely, and let stand for 3 or 4 minutes before using. Never, under any circum-

stances, allow tea to boil. The usual proportion is a small teaspoonful of tea to 1 cup of boiling water, but this is too strong for general use.

Coffee.

Coffee may be made in various ways; by filtering, clarifying with an egg, or made with cold water. A common rule for making coffee is as follows: 1 heaping tbsp. ground coffee to 2 cups of freshly boiling water, 1 egg shell. Scald the coffee-pot, put in the coffee and the egg shell, add the boiling water, cover and boil just 3 minutes. Before serving, add a tbsp. of cold water; let stand for a few minutes before using.

Coffee Made with an Egg.

1 egg is sufficient to clear 1 cup of ground coffee; if a smaller quantity be desired, half the egg may be used. Add ½ cup cold water to the portion of egg to be used, and ½ cup of ground coffee. Beat well, put it in the coffee-pot, add 1 qt. of boiling water, and boil 3 minutes. Move back where it will keep hot, but not boil, for 10 minutes. Pour out a little and pour it back again to clear the spout before serving.

Cocoa.

1 pt. of milk. 3 tbsps. of water.	2 (l.) tsps. of cocoa.

Put the milk in the double boiler and set on the fire, mix the cocoa to a smooth paste with the cold water. When the milk boils, add the cocoa and boil for 1 minute. Serve very hot. If more water and less milk be used, allow a little more cocoa.

SOUPS.

Soups may be divided into two classes, soup made with stock, and with milk. As soup should form part of the regular daily diet, and may be made from the cheaper materials, it is absolutely necessary that every housekeeper should understand the art of making it properly.

In the first place it is well to know what may be used in the process of soup making. The first and most important step is to prepare the stock. For this purpose have a large earthen bowl or "catch all," as some teachers call it. Into this put all the bones, trimmings, bits of steak or chop and gravy which has been left over. Keep in a cold place. When needed, cover with cold water and simmer 4 or 5 hours; strain and set away to cool. When cold, remove the fat which will have formed a solid coating on the top. The stock is now ready for use. By saving the remains of vegetables cooked for the table, the outer stocks of celery, a hard boiled egg, etc., a very palatable and nutritious soup may be made at a trifling cost. In families where large quantities of meat are used, there should be sufficient material without buying meat for soup. It is not necessary to have all the ingredients mentioned in some recipes in order to secure satisfactory results. It will, however, be necessary to understand soup flavorings, so as to know which ones may be left out. Stock made from the shin of beef, or from the cheaper pieces which contain the coarser fibre and gristle, require long, slow cooking (see Methods).

Never soak meat in water before cooking in any form. Wipe carefully with a damp cloth before cutting or pre-

paring for use. For soup break or saw the bones into small pieces, and for each pound of meat and bone allow 1 qt. of cold water. Cover the kettle closely and let it heat slowly until it reaches the simmering point, when it should be moved back and kept at that degree for several hours. Soup should never be allowed to boil hard. The scum which rises to the surface is the albumen and juices of the meat, and should not be skimmed off. If the kettle is clean, and all impurities removed from the meat, there will not be anything objectionable in the scum. Stock must always be allowed to remain until cold, so that the fat may be removed before using. A strong, greasy soup is rarely relished, and is one of the principal reasons why so many people dislike this valuable article of diet. Do not add salt to the meat which is being prepared for stock until a few minutes before removing from the fire. Salt hardens the water if added at first and makes the tissues more difficult to dissolve. Stock may be kept for several days by occasionally bringing it to the boiling point. This is not necessary in winter if it is kept in a cold place.

Vegetable Soup.

1 qt. stock.
½ cup each chopped turnip and cabbage.
1 tsp. sugar.
1 ssp. pepper.
½ cup each of onion, carrot, celery (chopped).
1½ tsp. salt.

If all these vegetables are not available, a little macaroni, rice or barley may be added. Chop all the vegetables very fine, cabbage or onions should be parboiled 5 minutes, drain carefully. Put all the vegetables together, cover with 1 qt. of water and simmer until

tender, then add the stock, the seasoning, and allow it to simmer about 10 minutes. Serve without straining.

Tomato Soup.

1 pt. of canned or stewed tomatoes.
½ tsp. salt.
1 tsp. sugar.
1 tbsp. butter.
2 whole cloves or ½ bay leaf.
1 pt. of stock.
½ ssp. pepper.
1 tbsp. minced onion.
1 tbsp. flour or cornstarch.

A speck of cayenne may be added if desired.

Put the tomato and stock in a saucepan and set on the fire. Cook the vegetables in the butter for 15 minutes; then press out the butter and put the vegetables in the soup. Into the butter remaining in the pan put the flour and stir until smooth, then add to the soup. Allow all to simmer for 20 minutes; strain and serve.

Split Pea Soup.

1 pt. of split peas.
1½ qt. of boiling water.
1 qt. of stock.
Salt and pepper to taste.

Wash the peas in cold water (rejecting those which float) and soak them over night. In the morning drain the water off and cover them again with 1 qt. of the boiling water. Boil until tender, about 1½ hour. Now add the stock and 1 pt. of the boiling water. Press the whole through a sieve; wash the soup kettle, return the soup, boil up once, add salt and pepper and serve with croutons. Dried pea soup may be made in exactly the same manner, using 1 pt. of dried peas instead of the split ones.

Onion Soup.

1 large Spanish onion.
1 qt. stock.
1 tbsp. flour.
2 tbsps. butter.
Salt and pepper to taste.

Peel and chop the onion. Put the butter in a frying-pan, add the onion, and stir until a nice brown. Put the stock on to boil. Skim the onions out of the butter and add them to the stock Stir 1 tbsp. of flour into the remaining butter, thin with a little of the stock, put all together, and simmer for 20 minutes. Add salt and pepper, and it is ready to serve.

Macaroni Soup.

1 qt. clear soup.
1 tsp. salt.
5 sticks macaroni.

Break the macaroni into small pieces and throw it into 1 quart of boiling water containing the tsp. of salt. Let it boil uncovered 25 minutes. Drain off the water and add the macaroni to the hot stock, cover and cook slowly for 10 or 15 minutes. A little more seasoning may be added if desired.

Oyster Soup.

1 pt. oysters.
½ pt. cold water.
¼ tsp. pepper.
Salt to taste.
1 pt. milk.
2 (l.) tbsps. flour.
2 tbsps. butter.

Put a strainer over a bowl and turn the oysters into it. Pour the water over the oysters and stir with a spoon until all the liquid has passed through the strainer. Reserve ½ cup of the milk, pouring the remainder into the double boiler, set it on the fire. Put the oyster liquor in a stewpan, and heat slowly. Mix the cold milk with the flour, and stirring into the boiling milk; cook for 10 minutes. When the oyster liquor boils, skim it When the flour and milk have cooked for 10 minutes, add the oysters, butter, salt, pepper and oyster liquor.

Cook until the oysters curl on the edge and are plump. Serve at once.

Bean Soup (Without Stock).

1 qt. dried white beans.
1 large tbsp. butter.
2 qts. water.
Salt and pepper to taste.

Wash the beans, cover them with water, and soak over night. Next morning drain, put them on to boil with 2 quarts of fresh cold water. As soon as they come to a boil drain this water off and throw it away. Cover again with 2 quarts of fresh boiling water, add 1 ssp. of soda, and boil until soft. Press the beans through a sieve, return to the kettle, and if too thick add enough boiling water to make the soup about the consistency of cream. Add the salt, pepper and butter, and serve. Minced onion, carrot, or celery fried in a little butter or dripping, and added to this soup before straining, improves the flavor.)

Bouillon.

2 lbs. lean beef.
1 small onion.
A sprig of parsley.
1 qt. cold water.
1 stalk celery, or ½ tsp. celery seed.
1 bay leaf.

Remove all the fat and chop the meat very fine. Put it into the soup kettle with the water, bay leaf, parsley, onion and celery. Cover the kettle closely and place it in the back part of the range for 2 hours. Then move it over and let it come to a boil; skim at the first boil. Move back and simmer gently for 4 hours. Strain, return to the kettle, add salt and pepper. Beat the white of one egg with ½ cup of cold water until thoroughly mixed. Wash the egg shell, mash it and add

to the white. Now add the white, shell and water to the boiling bouillon; let it boil hard for 10 minutes, then throw in ½ cup of cold water and boil 5 minutes longer. Take the kettle off the fire, strain through a flannel bag, add salt to taste, and color with caramel. (See recipe for caramel.) This is an excellent preparation for invalids.

FISH.

Fish is an invaluable article of food. It provides variety in diet, and while less stimulating than meat, is usually more easily digested. Fish should be perfectly fresh and thoroughly cooked. The most wholesome as well as the most palatable methods for cooking fish are broiling and baking. The flesh of fresh fish is firm and will not retain the impress of the finger if pressed into it. The eyes should be bright and glassy, the gills red and full of blood. Fish should be cleaned as soon as possible and thoroughly wiped with a cloth wet in salt water, and should be kept in a cool place. Do not put it near other food such as milk, butter, etc., as they will absorb the odor.

Broiled Fish.

Rub a double broiler well with a piece of suet before putting in the fish. Lay the fish flat so that the flesh side will be exposed on one side of the broiler and the skin on the other. Broil carefully, as the skin side burns very quickly. A fish weighing 3 lbs. will take about 25 or 30 minutes to broil. When cooked sprinkle with salt and pepper, and serve very hot.

Baked Fish.

1 cup cracker or bread crumbs.
1 ssp. salt.
1 tsp. chopped onion.
1 tsp. chopped parsley.
1 ssp. pepper.
¼ cup melted butter or dripping.

Clean, wipe and dry the fish, rub with salt; fill with stuffing and sew or tie carefully. Rub all over with butter (or dripping), salt and pepper, dredge with flour, put it into a hot oven; baste when the flour is brown, and often afterwards. Remove carefully from the pan and place upon a hot platter.

Scalloped Fish.

Pick over carefully any remnants of cold boiled or baked fish, put into a shallow dish in alternate layers with bread crumbs and cream sauce. Cover with crumbs and bake till brown.

Salt Fish Balls.

1 cup salt fish.
1 tsp. butter.
¼ ssp. pepper.
1 pint potatoes.
1 egg, well beaten.
More salt if needed.

Wash the fish, pick in pieces and free from bones. Pare the potatoes and cut in quarters. Put the potatoes and fish in a stewpan and cover with boiling water. Boil until the potatoes are tender Drain off all the water; mash and beat the fish and potatoes till very light. Add the butter and pepper, and when slightly cooled add the egg. Lift in a tbsp. and drop into smoking hot fat 1 minute, drain on brown paper; they may be formed into balls and browned in a very hot oven.

MEAT.

(See Analysis, Chap. V).

As meat is composed of several substances, fibrine, albumen, gelatin, fat and the juices, it is necessary to understand the various methods of cooking in order to secure the best results. Meat has its season as well as many other foods. Pork is better in autumn and winter; veal in the spring and summer; fowl in autumn and winter; lamb in the summer and autumn; mutton and beef may be used any time. Meat should not be allowed to remain in the paper in which it comes from market, as it absorbs the juices and injures the flavor. Wipe all over with a clean wet cloth. Examine carefully, remove any tainted or unclean portions and keep in a clean, cool place until required. Good beef should be a bright red color, well mixed with fat, and a layer of fat on the outside; the suet should be dry and crumble easily. (See meat diagrams for different cuts.) Mutton should have an abundance of clear, white fat, the flesh fine grained and a bright red color. The fat of veal should be clear and white, the lean pink, and should always be thoroughly cooked. Pork is more indigestible when fresh than when cured, as in bacon and ham. Fresh pork should be firm, the fat white, the lean a pale red.

Roast of Beef.

Wipe, trim, and tie or skewer into shape the cut for roasting. If there be a large piece of the flank, cut it off and use for soups or stews. If you wish to roast it, turn it underneath and fasten with a skewer. Lay the meat on a rack in a pan, and dredge all over with flour. Put

on the top of a roast 2 or 3 tbsps. of dripping or pieces of the fat; put it in a very hot oven at first. After the outside has become seared, check off the heat and allow to cook slowly, basting frequently. (See time table for baking.)

Broiled Steak.

Trim the steak free from all suet (save all trimmings for stews or the stock pot). Put the meat plate to warm, grease the broiler with a little of the fat. See that the fire is clear. Put the steak on the hot broiler and place it over the fire, turning every 10 seconds. It will take about 8 minutes if the steak is 1 inch thick. When done, place it on the hot plate, dredge it with salt and pepper; turn over and season the other side. Serve immediately.

Pan-Broiled Steak.

When the fire is not suitable for broiling, heat the frying pan until smoking hot; trim the steak as for broiling, place firmly on the hot pan, turn frequently as in broiling, with a broad knife or pancake turner; never insert a fork, as it allows the juice to escape. It will cook in 10 minutes. Season, and serve the same as broiled steak. If a gravy is desired, fry a little of the suet and trimmings in the pan—after the steak has been removed—until brown, lift out the meat or suet, add 1 tbsp. of flour, stir until brown, add pepper and salt to taste, then add 1 teacup of boiling water. Cook for 2 or 3 minutes and strain over the steak.

Hamburg Steak.

1 lb. of steak from the upper side of the round, or any piece of lean beef free from gristle; chop very fine, add

1 tbsp. of onion juice (or finely minced onion), ½ tsp. salt, ½ ssp. black pepper, mix well together; dip the hands in cold water, take 2 tbsps. of the mixture and form with the hands into small round cakes. Have the frying pan very hot, put in 2 tbsps. of dripping; when hot, put in the steaks, brown on both sides—or they may be pan-broiled. Place them on a hot dish, add a tbsp. of flour to the fat remaining in the pan, mix until smooth and brown; add a cupful of boiling water, stir until it boils, add pepper and salt to taste, and pour over the steak.

Beef Stew with Dumplings.

2 lbs. of lean beef (cheaper cuts). Cut into pieces about 1 inch square, dredge with flour. Put 2 tbsps. of dripping into a frying pan; as soon as it is very hot put in the meat and shake or stir until nicely browned. Skim out the meat and put it in a saucepan. Add 1 tbsp. of flour to the dripping remaining in the pan, mix and add 1 quart of boiling water; stir over the fire until it boils, then strain it over the meat; add one small onion, pepper and salt to taste. Cover the saucepan closely and let it simmer for 2 hours. Make the dumplings by sifting 1 pint of flour, to which has been added 2 tsps. baking powder. Add ½ tsp. salt and enough milk to make a soft dough. Lift the dough in spoonfuls, placing them over the meat, cover quickly and let boil 10 minutes. Do not uncover the saucepan while the dumplings are cooking or they will fall immediately. Be careful not to allow the stew to burn while the dumplings are cooking.

Pot Roast.

Trim off the rough parts of a brisket of beef or any of the cheaper cuts. Place it in a kettle over a good fire; brown on one side, then turn and brown on the other; add 1 pint of boiling water, cover closely and simmer, allowing 20 minutes to every pound. Add pepper and salt when the meat is nearly done.

Braised Beef.

From 4 to 6 lbs. of beef from the lower part of the round or rump. Trim and rub well with salt, pepper and flour. Chop 2 small onions and fry until light brown in pork fat or dripping; skim them out and put them into the pan in which the meat is to be braised, then brown the meat all over, adding more fat if needed (this may be done in a very hot oven). Put the meat into the pan, on skewers to keep it from sticking, with the onions around it. Add 1 qt. of boiling water, cover closely, putting a brick or heavy weight on the cover to keep it down, and cook in a moderate oven 4 hours, basting occasionally. Turn once and add more water as it evaporates, so as to have 1 pt. left for gravy. When tender take up the meat, remove the fat, add more salt and pepper, and if liked, a little lemon juice or tomato may be added. Thicken with 2 tbsps. of flour wet in a little cold water. Cook 10 minutes and pour the gravy over the meat. Any tough meat may be cooked in this way.

Hash.

Take any pieces left of a cold roast, steaks or stews, chop very fine; take 1 tbsp. butter or dripping, 1 tbsp. of flour, stir together in a hot frying pan, when brown add

1 cup boiling water; add 1 tbsp. chopped onion, pepper and salt to taste, let simmer for 10 minutes, then add the meat, stir until heated thoroughly and serve on toast.

Corned Beef or Sausage Hash.

1 pt. hashed corn beef or sausage.
1 tsp. salt.
1 tbsp. butter or dripping.
(Omit the milk if sausage is used).
1 pt. of hashed potatoes.
¼ tsp. pepper.
½ cup of milk.

Mix the potato and meat, season with the pepper and salt, add the milk and stir lightly. Put the butter or dripping into a hot frying pan, when melted put in the hash, spread it lightly and evenly, but do not stir it. Cover the pan and set where the hash will cook slowly for 10 or 15 minutes. Move over to a hotter part of the stove and let it remain until a rich, brown crust has formed on the bottom. Fold over and serve on a hot dish.

Mutton—Boiled Leg of Mutton.

Wipe the leg with a damp towel. Dust a cloth with flour and wrap the leg up with it. Put it into a kettle of boiling water and simmer gently 20 minutes to every pound; add salt when the leg is nearly done. When cooked remove the cloth carefully, garnish with parsley and serve with caper sauce. Save the liquor in which it was boiled for broth, stews, etc.

Irish Stew.

3 lbs. of the neck of mutton.
4 good sized onions.
Salt and pepper to taste.
4 potatoes cut into dice.
2 qts. of water.

Cut the meat into small pieces, cover with the water, which should be boiling, add the onions sliced, and

simmer gently for 3 hours. About ½ hour before the meat is done add the potatoes, season with pepper and salt, and serve.

To Bake or Roast a Quarter of Lamb.

Wipe the meat with a damp cloth, place in a baking pan, dredge with pepper, put 1 tsp. of salt in the pan, add just enough water to keep the pan from burning until enough of its own fat has fried out to use for basting. Baste at least every 10 minutes; allow 15 minutes to every pound in a very hot oven. Serve with mint sauce.

Lamb Chops

Are broiled or pan-broiled the same as beefsteak.

Veal—Veal Cutlets.

Have the cutlets about ¼ of an inch thick, dredge with salt, pepper and flour. Put a tbsp. of dripping in a frying pan, and when very hot put in the cutlets; when brown on one side turn and brown on the other, take out and place on a hot dish. Add a tbsp. of flour to the fat remaining in the pan, mix and stir until brown; add a cupful of boiling water, pepper and salt to taste, stir until it boils, pour over the cutlets, and serve.

Stewed Knuckle of Veal.

Wipe the knuckle well with a damp cloth. Cut it into pieces. Put into a kettle with 2 quarts of boiling water, add 1 onion chopped, ¼ lb. of chopped ham, and 1 bay leaf, pepper and salt to taste. Cover and stew slowly for 2½ hours (a half cup of rice may be added to this stew).

Jellied Veal.

1 knuckle of veal.	1 onion.
1 blade of mace.	1 bay leaf.
12 whole cloves.	6 pepper corns.
½ cup of vinegar.	Salt and pepper to taste.

Wipe the knuckle and cut it into pieces. Put into a kettle with 2 quarts of cold water; bring slowly to simmering point; skim and simmer gently for 2 hours; then add the onion, mace, bay leaf, cloves, pepper corns, and simmer 1 hour longer. Take out the knuckle, carefully remove the bones and put the meat into a mould or square pan. Boil the liquor until reduced to 1 quart, add the vinegar, pepper and salt to taste, strain and pour over the meat. Stand away until cold, when it may be turned out and garnished with parsley and lemon.

Fillet of Veal (stuffed).

1 cup of bread crumbs.	½ cup of chopped salt pork or ham.
1 tsp. of summer savory.	1 tsp. of salt.
1 ssp. of pepper.	

Have the bone removed from the shoulder, fill the space from which the bone was taken with the stuffing, fasten the meat together with a skewer to prevent the stuffing from coming out, put into the pan with 3 or 4 tbsps. of dripping, allowing 20 minutes to each pound, basting frequently in a moderately hot oven.

Pork and Beans.

Soak the beans over night in cold water. In the morning wash them well in a colander, put them on to boil in cold water, at the first boil drain this water off

and cover with fresh boiling water. Score the rind of the pork and put it in with the beans. Simmer gently until you can blow off the skin of the beans. To do this, take 3 or 4 beans in your hand, blow hard on them, and if the skin cracks they are done. Take out the pork and drain. Put the beans into an earthen pot or granite kettle with a cover; almost bury the pork in the centre of the beans. Add 1 tsp. of salt to 1 pint of the water in which the beans were boiled, pour this into the pot, sprinkle with pepper, pour over the beans 1 large spoonful of molasses, put on the lid, bake in a moderate oven for 6 or 8 hours. If baked in an ordinary iron baking pan they must be covered with another on which has been placed a weight, carefully watched, and baked only 3 hours.

Roast Spare Ribs.

Put the spare ribs in a baking pan, sprinkle lightly with pepper, add ½ tsp. of salt to ½ cup of boiling water, and pour in the bottom of the pan. Roast 20 minutes to every lb., basting often. When done, make a gravy and serve as for any other roast. (Spare ribs may be stuffed, the ribs cracked crosswise, the stuffing placed in the centre, the two ends folded over, roast as above.)

Broiled Ham.

Have the ham cut into slices about ¼ inch thick, trim off the rind and rusty edge. Broil the same as steak or chops. (This is a very nice way to serve ham with poached eggs.)

Ham may be pan-broiled as directed in former recipes.

Fried Bacon.

Cut into very thin slices, put into a very hot frying pan, and cook until clear and crisp.

Sausage.

Prick the skins with a sharp fork so as to prevent bursting; place them in a frying pan over a moderate fire and fry in their own fat until a nice brown. After taking the sausage from the pan, add 1 tbsp. of flour to the fat in the pan, add 1 cup of boiling water, stir until it boils, pour over the sausage and serve.

Liver and Bacon.

Have the bacon cut in thin slices and keep it cold until the time to cook it. Have the liver cut into slices about $\frac{1}{3}$ of an inch thick. If it be calf or sheep's liver, wash it in cold water and let it drain; but if it be beef liver, after washing it, cover with boiling water and let it stand for 5 minutes, then drain it. Cook the bacon as directed, then take it up. Lay the slices of liver in the hot fat, cook them for 8 or 10 minutes, turning often; season with pepper and salt. Arrange the liver on a warm platter, make a gravy as directed in other recipes, pour over the liver, placing the bacon round the outside. (Always cook bacon quickly and liver slowly.)

POULTRY.

The best chickens have soft yellow feet, short thick legs, smooth, moist skin and plump breast; the cartilage on the end of the breast bone is soft and pliable. Pin feathers always indicate a young bird and long hairs an older one. All poultry should be dressed as soon as

killed. Cut off the head, and if the fowl is to be roasted, slip the skin back from the neck and cut the neck off close to the body, leaving skin enough to fold over on the back. Remove the windpipe, pull the crop away from the skin on the neck and breast, and cut off close to the opening in the body. Cut through the skin about 2 inches below the leg joint, bend the leg at the cut by pressing it on the edge of the table and break off the bone. Then pull out the tendon. If care be taken to cut only through the skin, these cords may be pulled out easily, one at a time, with the fingers; or by putting the foot of the fowl against the casing of a door, then shut the door tightly and pull on the leg. The drum stick of a roast chicken or turkey is greatly improved by removing the tendons. Cut out the oil bag in the tail, make an incision near the vent, insert two fingers, keeping the fingers up close to the breast bone until you can reach in beyond the liver and heart, and loosen on either side down toward the back. Draw everything out carefully. See that the kidneys and lungs are not left in, and be very careful not to break any of the intestines. When the fowl has been cleaned carefully it will not require much washing. Rinse out the inside quickly and wipe dry. In stuffing and trussing a fowl, place the fowl in a bowl and put the stuffing in at the neck, fill out the breast until plump. Then draw the neck skin together at the ends and sew it over on the back. Put the remainder of the stuffing into the body at the other opening and sew with coarse thread or fine twine. Draw the thighs up close to the body and tie the legs over the tail firmly with twine. Put a long skewer through the thigh into the body and out through

the opposite thigh, turn the tips of the wings under the back of the fowl, put a long skewer through from one wing to the other. Wind a string from the tail to the skewer in the thigh, then up to the one in the wing across the back to the other wing, then down to the opposite side and tie firmly round the tail. If you have no skewers, the fowl may be kept in shape by tying carefully with twine. Clean all the giblets, cut away all that looks green near the gall bladder, open the gizzard and remove the inner lining without breaking. Put the gizzard, heart, liver, and the piece of neck which has been cut off, into cold water, wash carefully, put in a saucepan, cover with cold water, place on the back of the stove and simmer till tender. Use the liquid for making the gravy; the meat may be chopped and used for giblet soup.

Roast Chicken (or Turkey).

Singe carefully, remove the pin feathers, draw as directed above. Wipe, stuff, sew and tie or skewer into shape, dredge with flour, cover with plenty of dripping; roast in a hot oven. When the flour is brown check the heat, baste frequently with the fat, and when nearly cooked dredge with pepper and salt and again with flour. Bake a 4 lb. chicken 1½ hour, or until the joints separate easily. If browning too fast, cover with paper. (Roast chicken is considered to be more wholesome and to have a better flavor when cooked without stuffing.)

Fricassee of Chicken.

The first attempt of an inexperienced cook in the preparation of a chicken should be a fricassee, as it will

provide an opportunity for her to study the anatomy of a chicken while cutting it in pieces, and also show her the position of the intestines, so that when she attempts to draw a fowl she will know just where to place her hand so as to remove them without breaking.

To prepare a chicken for a fricassee, clean and singe. Cut the chicken at the joints in pieces for serving. Place in a kettle, cover with boiling water, add 2 level tsps. of salt, a ssp. of pepper (some like a small piece of salt pork). Simmer until tender, reducing the water to a pint or less, lift the chicken, melt 1 tbsp. of butter in a saucepan, add 2 tbsps. of flour, and when well mixed pour on slowly the chicken liquor. Add more salt if needed, pepper, ½ tsp. of celery salt, 1 tsp. of lemon juice (an egg may be used by beating and pouring the sauce slowly on the egg, stirring well before adding it to the chicken). Pour this gravy over the chicken and serve; dumplings may be added if desired, or it may be placed in a deep dish, covered with pastry and baked for chicken pie.

(The chicken may be browned in a little hot fat as in braising meat, and cooked in the same way.)

Broiled Chicken.

Singe and split a young chicken down the back. Break the joints, clean and wipe with a wet cloth, sprinkle with pepper and salt, rub well with butter or dripping, place in a double grid-iron and broil 20 minutes over a clear fire. The chicken may be covered with fine bread crumbs or dredged with flour, allowing a plentiful supply of butter or dripping, and baked in a hot oven ½ hour.

Meat Souffle.

Make 1 cup of white sauce and season with chopped parsley and onion juice. Stir 1 cup of chopped meat (chicken, tongue, veal or lamb) into the sauce. When hot, add the beaten yolks of two eggs; cook 1 minute and set away to cool. When cool, stir in the whites, beat very stiff. Bake in a buttered dish about twenty minutes and serve immediately.

Croquettes.

These may be made with any kind of cooked meat, fish, rice, potatoes, etc., or from a mixture of several ingredients, when mixed with a thick white sauce, as follows: 1 pint hot milk, 2 tbsps. butter or beef dripping, 6 (l.) tbsps. flour, or 4 (l.) tbsps. cornstarch, ½ tsp. salt, ½ ssp. white pepper, ½ tsp. celery salt, a speck of cayenne. Melt the butter or dripping in a saucepan, when hot add the dry cornstarch or flour. Stir till well mixed. Add ⅓ of the hot milk and stir as it boils and thickens, add the remainder of the hot milk gradually. The sauce should be very thick. Add the seasoning, and mix it while hot with the meat or fish. It is improved by adding a beaten egg just before the sauce is taken from the fire. When cold, shape into rolls or like a pear, roll lightly in beaten egg, then in bread crumbs, and fry in deep hot fat. Drain on coarse brown paper. If the mixture be too soft to handle easily stir in enough fine cracker or soft bread crumbs to stiffen it, but never flour.

HOT PUDDINGS.

Apple Pudding (baked).

1 pint flour.
¼ cup butter or dripping.
1 cup milk.
1 tsp. cream of tartar.
3 tbsps. sugar.
½ tsp. salt.
1 egg.
½ tsp. soda sifted into the flour.
6 tart apples.

Mix the dry ingredients, beat the egg and mix it with the milk, stir this into the dry mixture. Core, pare and cut the apples into quarters (if large into eighths). Place in the bottom of a pudding dish, sprinkle over them the sugar, a little nutmeg or cinnamon may be added if desired. Put the mixture over this, lifting the apples with a fork or spoon so as to let the mixture penetrate to the bottom of the pan. Bake in a moderately hot oven about 30 minutes. Serve with lemon sauce or thin custard.

Cottage Pudding.

½ pint sifted flour.
½ cup sugar.
¼ tsp. salt.
1 egg.
½ cup milk.
1 tbsp. butter.
2 tsps. baking powder (level).

Beat the butter and sugar to a cream, add the unbeaten egg, beat vigorously for 3 or 4 minutes, add the salt, then the flour, with which the baking powder should be mixed. Beat for a few seconds, then turn the batter into a small, buttered pudding dish, bake about 25 minutes in a moderate oven; serve with lemon sauce.

Lemon Pudding.

4 level tbsps. granulated sugar.
1 ssp. of salt.
2 tbsps. milk.
The juice and grated rind of a small lemon.
6 (l.) tsps. cornstarch.
1 tbsp. butter.
½ cup water.
1 egg.

Mix the cornstarch with 3 tbsps. cold water; put the remainder of the water in the saucepan and set on to boil. Stir into this the mixed cornstarch and cook until clear. Take from the fire, add the salt and lemon, reserving ½ tsp. of the lemon. Beat the butter to a cream, gradually beat into it the sugar, the yolk of the egg, lastly the milk. Stir this mixture into the cooked ingredients, and bake in a moderate oven for 20 minutes. Beat the white of the egg to a stiff froth, beat into it 1 tbsp. of powdered sugar and the ½ tsp. of lemon juice. Spread this over the hot pudding and leave in the oven until slightly browned. (This pudding is better served very cold.)

Bread Pudding.

1 pint stale bread crumbs.
1 quart of sugar.
1 ssp. of nutmeg or cinnamon.
2 eggs.
½ tsp. salt.

Soak the bread crumbs for 1 hour in 1 quart of milk. Beat the eggs, add the sugar and seasoning, stir all into the bread crumbs, bake 1 hour in a buttered pudding dish. (Raisins or currants may be added if desired.)

Another method for making bread pudding is to butter thin slices of stale bread, spread with a little jam or sprinkle a few currants (well washed) over each layer, lay them in a pudding dish, pour over a quart of milk,

to which has been added 3 well beaten eggs, ½ cup sugar Bake until the custard thickens. This pudding may be served either hot or cold.

Steamed Apple Pudding.

3 pints pared and quartered apples.
½ pint flour.
½ cup sugar.
1 tbsp. butter.
¼ of a grated nutmeg.
½ cup milk.
½ pint water.
¼ tsp. salt.
2 (l.) tsps. baking powder.

Put the apples, water, sugar, and nutmeg into a porcelain or granite saucepan and set on the fire. When the apples begin to boil, set back where they will cook gently. Mix the flour, salt and baking powder together. Rub the butter into this dry mixture, wet with the milk, stir quickly into a soft dough. Press or roll the dough lightly into a round piece about the size of the top of the saucepan. Lay this on the apples; put on a close cover and continue cooking gently for 30 minutes. The crust may be lifted to a plate for a moment, the apples turned into a pudding dish, then placing the crust over the top. To be served with lemon or nutmeg sauce.

Boiled Rice Pudding.

½ cup rice.
½ tsp. salt.
1 pint milk.
½ cup raisins.

Wash the rice well. Put it on the fire in 1 pint of cold water and let it cook for 10 minutes. Drain off the water, add the salt and milk; then cook in the double boiler for 2 hours, add the raisins when about half cooked. Do not stir the rice while it is cooking.

Brown Betty.

Pare, core and slice 6 or 7 tart apples. Put a layer of stale bread crumbs in the bottom of the baking dish, then a layer of the apples, another layer of bread crumbs and apples, and so on until all are used, having the last layer crumbs. Add ½ cup of water to ½ cup molasses, stir in 2 tbsps. of brown sugar; pour it over the crumbs and bake in a moderate oven for 1 hour.

Apple Snow.

6 apples.
Juice of 1 lemon.
1 cup white sugar.
Whites of 6 eggs.

Pare, core and steam the apples until tender, then press them through a seive and put aside to cool; when cold add the sugar and lemon juice. Beat the whites of the eggs to a very stiff froth, add the apples to them by spoonfuls, beating all the while. Heap in a glass dish and serve immediately. (This is a very delicate and wholesome pudding for an invalid.)

Scalloped Apples.

Made the same as Brown Betty, omitting the molasses, adding water and a little lemon juice instead.

Suet Pudding.

1 cup suet.
1 cup molasses.
3 cups flour.
½ tsp. salt.
1 cup raisins.
1 cup milk.
1 tsp. cinnamon.
2 tsps. baking powder.

Chop the suet very fine. Stone the raisins. Add the molasses to the suet, then the milk; mix well and add the salt, flour and cinnamon. Beat vigorously for 2 or

3 minutes, then add the raisins. Rub in the flour, to which has been added the baking powder; mix thoroughly, turn into a buttered mould, steam for 3 hours.

Tapioca Pudding.

1 cup tapioca.
4 eggs.
½ cup sugar.
1 quart milk.
¼ tsp. salt.
1 tsp. vanilla.

Wash the tapioca carefully, then add it to the milk and soak 2 hours. Beat the eggs and sugar together, add the salt, stir into the tapioca and milk, and bake in a moderate oven at least ¾ of an hour. Serve hot or cold.

Chocolate Pudding.

1 egg.
2 tbsps. cornstarch.
3 tbsps. sugar.
½ tsp. vanilla.
1 pint milk.
1 tbsp. boiling water.
½ tsp. salt.
1 oz. shaved chocolate.

Reserve ½ cup milk, put the remainder on the fire in a double boiler. Mix the cold milk with the cornstarch and salt. Beat the egg well and add to the cornstarch mixture. Stir this into the boiling milk and stir well. Put the chocolate, sugar and boiling water into a small frying pan or saucepan, and set over a hot fire. Stir until the mixture is smooth and glossy; beat this into the pudding and cook for 2 minutes longer. Take from the fire and add the vanilla. Dip a mould into cold water and turn the pudding into it. Set away to cool. When cold and stiff, turn out on a flat dish and surround with whipped cream; or serve with cream and sugar or a soft custard.

Snow Pudding.

½ box gelatine.	2 tbsps. cold water.
1 cup boiling water.	Juice of one lemon.
1 cup sugar.	Whites of 2 eggs.

Soak the gelatine in cold water for 2 hours. Pour upon this the boiling water and stir until the gelatine is dissolved; then add the sugar and lemon juice, stirring until the sugar is dissolved. Set the bowl in a pan of cold water, or broken ice. Stir frequently; when it begins to thicken, stir in the beaten whites of the eggs, pour into a mould and set away until firm. Serve with boiled custard.

Cream Pie.

Make a plain cup cake, and bake it in a shallow cake pan. When cooked and cold, split it carefully. Put 1 pint of milk on to boil in a farina boiler. Beat the yolks of 3 eggs and ½ cup of sugar together until light, then add the well-beaten whites, and stir them into the boiling milk; stir over the fire for about 1 minute, then take from the fire, add 1 tsp. of vanilla, and stand away to cool. When cold, and ready to serve, put a thick layer of this sauce between the layers of cake, pour the remaining sauce around the pie, and serve immediately.

Blanc Mange.

1 pint milk.	4 (l.) tbsps. cornstarch.
2 tbsps. sugar.	½ ssp. salt.

Put the milk on to boil. Moisten the cornstarch with a little cold milk, then add it to the boiling milk, and stir until it thickens; let it cook slowly for 5 minutes; add the sugar and salt, take from the fire, pour into a mould and set away to harden.

Strawberry Shortcake.

1 pint flour.
½ tsp. salt.
3 (l.) tsps. baking powder.
1 oz. butter.
1 cup milk.

Mix the salt, flour and butter together. Sift, then add the baking powder and sift again. Add the liquid gradually, mixing and cutting with a knife until the dough is light and spongy; turn it out on a well floured board, pat into a flat cake and roll gently till ½ an inch thick. Bake in a spider or pie plate in a rather hot oven. Split and spread with sweetened berries and serve either hot or cold.

PUDDING SAUCES.

Plain Sauce.

1 cup water.
1 tsp. butter.
½ ssp. grated nutmeg.
3 tbsps. sugar.
2 tsps. flour or cornstarch.

Melt the butter and flour together, stir in the hot water, add the sugar and flavoring, cook until smooth and clear.

Molasses Sauce.

½ cup molasses.
½ cup water or ½ tbsp. vinegar.
2 (l.) tsps. flour.
½ cup sugar.
1 tbsp. lemon juice.
1 tbsp. butter.
½ ssp. salt.

Mix the flour and sugar together. Pour the boiling water upon it. Add the molasses and place on the range. Simmer for 10 minutes. Add the other ingredients; boil up once and serve. (Omit lemon if vinegar is used.)

Cream Sauce.

1 egg.
1 tsp. butter.
1 tsp. cornstarch.
½ cup powdered sugar.
1 tsp. vanilla.
1 cup boiling milk.

Beat the white of the egg to a stiff froth; then gradually beat into it the powdered sugar and cornstarch. Next add the yolk of the egg and beat well. Pour upon this the cupful of boiling milk and place on the fire. Stir until it boils, then add the butter and vanilla.

Lemon Sauce.

1 tbsp. cornstarch.
½ cup sugar.
1 pint boiling water.
1 tbsp. butter.
1 egg.
1 lemon.

Beat the egg, add the cornstarch and sugar, stir them well together; add the boiling water gradually and stir over the fire until thick; add the butter, juice and grated rind of one lemon. Serve hot.

Vanilla Sauce

1 cup milk.
2 (l.) tbsps. sugar.
2 eggs.
½ tsp. vanilla.

Put the milk on to boil, beat the yolks and sugar till very light; add them to the boiling milk; stir over the fire until creamy. Have the whites beaten, pour over them the boiling mixture; beat thoroughly and serve at once.

CAKE.

There are practically two kinds of cake, that made with butter, and cake made without butter. When these two methods are understood, cake making becomes easy. A few simple rules must govern all cake making.

1st. Regulate the heat. Cakes without butter require a quick oven; with butter, a moderate oven. 2nd. Beat whites and yolks separately. 3rd. Beat butter and sugar to a cream. 4th. Add the whites last. 5th. Currants should be cleaned, washed and dried and floured (to which flour some of the baking powder should be added). 6th. Add the milk or water gradually. 7th. Sift the flour before measuring. 8th. 2 level tsps. of baking powder are equal to ½ tsp. soda and 1 tsp. cream of tartar. 9th. When looking at a cake while baking, do it quickly and without jarring the stove. 10th. To find out if it is baked, run a broom straw through the centre, if no dough adheres the cake is done. 11th. If browning too quickly, cover with brown paper and reduce the heat gradually. This is usually necessary in baking fruit cake. 12th. Mix cake in an earthen bowl, never in tin. 13th. Soda, cream of tartar, and baking powder should be crushed and sifted with the flour. Always attend to the fire before beginning to make cake. Coarse granulated sugar makes a coarse, heavy cake. If cake browns before rising the oven is too hot. When it rises in the centre and cracks open it is too stiff with flour. It should rise first round the edge, then in the middle and remain level.

GINGERBREAD.

1 cup molasses.
2 tbsps. butter.
1 tsp. ginger.
1 pint flour.
½ cup sour milk.
1 tsp. soda.
1 egg.

Put the molasses and butter in a pan and set on the stove. When the mixture boils up add the soda and ginger, and take from the fire immediately. Add the

milk, the well-beaten egg and the flour, beat well. Bake in a shallow cake pan in a rather quick oven for 20 minutes.

Spice Cake.

¼ cup butter.
½ cup molasses.
½ cup sour milk.
½ ssp. salt.
½ tsp. soda.
The juice and rind of ½ lemon.
½ cup sugar.
2½ cups flour.
½ tsp. ginger.
1 tsp. cinnamon.
¼ nutmeg, grated.
1 egg.

Beat the butter to a cream. Gradually beat into it the sugar, then the spice and lemon, next the molasses. Now dissolve the soda in one tbsp. cold water and stir it into the sour milk; add this, and the egg well beaten, to the other ingredients. Lastly add the flour, and beat briskly for ½ minute. Pour into a well buttered pan and bake in a moderate oven for about 50 minutes.

Sponge Cake.

3 eggs.
⅔ cup flour.
⅔ cup pulverized sugar.
The grated rind and juice of ½ lemon.

Beat the yolks of the eggs and sugar until very light, now add the juice and rind of the lemon and half the flour; beat the whites to a very stiff froth, add the remainder of the flour and the whites alternately, stirring lightly, pour into a greased cake pan. Bake in a quick oven from 25 to 30 minutes.

Roll Jelly Cake.

2 eggs.
1 cup sugar.
1½ cup flour.
½ tsp. salt.
1 cup sweet milk.
3 (l.) tsps. baking powder.

Beat the eggs separately till very light, then beat them together, add the sugar, then the milk gradually, then the flour in which the salt and baking powder have been mixed. Spread very thin on long shallow pans. Spread with jelly while warm and roll up.

Seed Cake.

1 cup butter.
1 cup milk.
2 tsps. caraway seeds.
3 tsps. baking powder.
1½ cup sugar.
3 eggs.
3 cups flour.

Cream the butter, add the sugar gradually, then the yolks of the eggs, then the seeds; sift the baking powder with the flour; add the flour and milk alternately a little at a time, lastly the whites which have been beaten stiff and dry; bake from 40 to 50 minutes.

Cookies (plain).

½ cup butter.
¼ cup milk.
2 even tsps. baking powder.
1 cup sugar.
1 egg.
Flour to roll out thin.

Cream the butter, add the sugar, milk, egg beaten lightly, and the baking powder mixed with two cups of flour, then enough more flour to roll out. Roll a little at a time. Cut out. Bake about 10 minutes.

Layer Cake.

½ cup butter.
1 cup sugar.
2½ cups flour.
3 eggs.
⅔ cup milk.
4 (l.) tsps. baking powder.

Beat the butter and sugar to a cream, then add the yolks of the eggs gradually; then the flour and milk

alternately (sifting the baking powder with the flour), add the well-beaten whites last. Bake in 3 tins in a moderate oven about 15 minutes. (Flavoring has been omitted in this recipe as the cake is more delicate by allowing the filling to provide the flavor.)

Plain Fruit Cake.

3 eggs.
1 cup milk.
1 oz. candied lemon.
4 (l.) tsps. baking powder.
⅔ cup butter.
3 (l.) cups flour.
1 cup raisins.

Mix as directed in preceding recipe, only mixing the fruit with the flour and baking powder.

Icing.

Whites of 2 eggs.
½ lb. powdered sugar.
1 tsp. of lemon juice.

Have the material very cold. Break the eggs carefully, beat the whites until frothy (not stiff); sift the sugar in gradually, beating all the while; add the lemon juice and continue beating until fine and white, and stiff enough to stand alone. Keep in a cool place, when using, spread with a knife dipped in cold water. If used for ornamenting press through a tube. It may be divided and different colorings added.

Boiled Icing.

1 cup granulated sugar.
⅓ cup boiling water.
¼ tsp. cream of tartar.
White of 1 egg.

Boil the sugar and water together until it hangs from the spoon. Beat the egg to a stiff froth, add the cream of tartar, then pour on the syrup, beating all the while. Beat until cold and thick.

PASTRY.

Pastry, unless light and tender, should never be eaten; even then it should be avoided by people with poor digestion. There are so many food preparations superior to pastry in both nutritive value and cost of time and material, that it will be wise to give it a very secondary place in the training of a culinary artist. However, as it is still a popular fancy with many, we may as well make the best of it. Butter is more wholesome in pastry than lard, although the latter makes a light crust. In order to secure satisfactory results in pastry making—especially puff pastry—three things should be observed: (1) have all the materials cold; (2) use as little liquid as possible; (3) handle lightly and quickly. Pastry should be very cold when it is put into the oven. Have the oven very hot.

Puff Paste.

1 lb. flour. 1 lb. butter.	Enough ice water to make into a very stiff dough.

If the butter is salty, wash it as follows: Scald a large bowl, then fill with cold water; wash the hands in hot soapy water, then rinse them in cold water, as this will prevent the butter from sticking to the hands. Turn the cold water out of the bowl; fill it with ice water, put the butter into it and work with the hands until soft and elastic. Drain the water from the butter and place on ice until hard. Sift the flour, put ¼ of the butter into the flour, cut with a knife or chopping knife until thoroughly mixed; then gradually add ice water until it is moist enough to hold together, turn out on the board or marble slab. Press into shape, roll lightly until

about ¼ inch thick; cut the remainder of the butter into small pieces, and lay over this layer of dough. Fold carefully over and over, roll three times. If the dough should get soft and sticky, place it in a tin or cold plate on the ice to harden between the rollings. Always fold pastry so as to keep it in layers—even when cutting off the roll keep the layers one above the other, not turning them on their sides. For patties, or especially flaky pastry, roll five or six times, provided it is not allowed to get soft. Pastry should be rolled about as thin as the edge of a plate for tarts, etc., and about ⅓ inch thick for a cover for chicken pie.

Plain Pastry.

2 cups flour. | 1 cup butter or lard.

Add the butter to the flour, chop with a knife, add enough ice water to make a firm dough. Roll out, fold, set on ice or in a cold place for at least ½ hour before baking.

Paste for Meat Pies, Etc.

1 pint flour.
½ tsp. soda.
Or 2 level tsps. baking powder.
1 egg.
½ tsp. salt.
1 tsp. cream tartar.
¼ cup butter or dripping.
1 cup milk.

Mix as for biscuit or shortcake.

MISCELLANEOUS.

Shepherd's Pie.

Three cups of any kind of cold meat, 6 or 7 potatoes, 1 small onion, 1 cupful of boiling milk, salt, pepper, 1½ cup gravy or stock thickened with 1 tbsp. of flour. Cut

the meat in small pieces and put in a deep earthen dish. Grate the onion into the gravy and pour over the meat. Pare, boil, and mash the potatoes. Add the salt, pepper and milk, and 1 tbsp. of butter or dripping. Cover the meat with this and bake in a moderate oven until nicely brown.

Beef Stew.

Take the bones and hard tough parts left from a roast of beef. Remove all the meat from the bones and cut it into small pieces. Cut about ¼ of a lb. of the fat into pieces; put it in the stewpan to fry. When it begins to brown put in ½ carrot, a piece of turnip and 2 small onions cut fine. Stir over the fire for 10 minutes. Take out the fat and vegetables and put the bones in the bottom of the kettle. Add the meat and cooked vegetables, but not the fat. Dredge with salt and pepper, and flour, using at least ½ cup flour. Add 3 pints of water and simmer gently 1 hour; pare and cut in slices 6 potatoes, simmer until the potatoes are well cooked. Draw forward where it will boil more rapidly, have dough ready for dumplings (see recipe for dumplings). Put the dumplings on the top of the stew; cover closely and cook just 10 minutes.

Stuffed Tomatoes.

Take 6 large smooth tomatoes, ½ tsp. salt, ½ ssp. pepper, ½ tbsp. butter, ½ tbsp. sugar, ½ tsp. onion juice, ½ cupful bread crumbs. Arrange the tomatoes in a baking pan. Cut a thin slice from the smooth end of each. With a small spoon scoop out as much of the pulp and juice as possible without injuring the shape. Mix the pulp and juice with the other ingredients and fill the tomatoes

with this mixture. Put on the tops and bake slowly ¾ of an hour. Lift the tomatoes carefully and place on a hot flat dish, garnish with parsley, and serve.

Stewed Kidneys.

Cut the kidneys in thin, round slices. Cover them with cold water and let them stand for ½ hour; wash them clean, and put them in a saucepan with 1 qt. of water or stock, 2 cloves, 2 tbsps. of onion juice, salt and pepper. Simmer 2 hours. Put 1 tbsp. of butter in the frying pan, and when hot add 1 of flour; stir until it is brown and smooth, and add to the kidneys. Add a little sweet herbs, and simmer ½ hour longer. If not seasoned enough, add a little more salt and pepper, and, if desired, 1 tbsp. of lemon juice. This dish can be prepared at any time, as it is quite as good warmed over as when it is prepared.

Creamed Eggs.

Boil 6 eggs 20 minutes. Make 1 pint of cream sauce. Have 6 slices of toast on a hot dish. Put a layer of sauce on each slice of toast, then part of the whites of the eggs, cut in thin strips, rub part of the yolks through a sieve, or a potato ricer, on to the toast. Repeat this, and finish with a third layer of sauce. Place in the oven for about 3 minutes, then serve.

Buttered Toast.

Cut the bread ⅓ of an inch thick. Turn the bread twice (so as to draw out the moisture) before browning. Have some melted butter on a plate, dip one side of the toast in this before serving.

Croutons (for soup).

Cut stale bread into ½ inch slices, remove the crust and cut into ½ inch cubes. Drop them into hot fat, which should be hot enough to brown them, while you count 40; drain and sprinkle with salt.

French Toast.

1 egg.
1 cup milk.
1 ssp. salt.
4 to 6 slices of stale bread.

Beat the egg lightly with a fork in a shallow dish, add the salt and milk. Dip the bread in this, turn; have a griddle hot and well buttered, put the dipped bread on the hot griddle, brown, then put a little piece of butter on the top of each slice, turn and brown on the other side. To be eaten hot with jelly or with butter and sugar.

Sandwiches.

Chop very fine cold ham, corned beef or tongue, adding a little of the fat. Mix 1 tsp. of dry mustard, 1 ssp. of salt, a few drops of lemon juice with cold water to a stiff paste; add to it ¼ cup butter creamed. Cut bread—at least 1 day old—in very thin slices, spread with the mustard and butter paste, then with the meat. Put two slices together and cut into any shape desired. (Chicken or veal sandwiches may be made by chopping the meat very fine, and adding to it a little of the cooked salad dressing or mayonnaise.)

A FEW GENERAL HINTS.

How to Blanch Almonds.

Shell the nuts, and pour boiling water over them; let them stand in the water a minute or two and then throw them into cold water. Rub between the hands.

To Clean Currants.

Sprinkle thickly with flour, rub well until they are separated and the flour, grit, and fine stems have loosened. Throw them into a strainer and wash thoroughly in cold water; change the water often; shake well in the strainer; then drain between towels, pick over carefully, and dry them in a warm place, but not in the oven. Put away in jars, cover closely, and they are ready for use at any time.

Serving Food.

Hot food should be served hot, and on hot plates. Cold food should be served very cold. A little garnish of parsley, hard-boiled egg, sliced lemon, toast, watercress or centre of a lettuce head adds much to the attractiveness of a dish. Small rolls, a square of bread, or croutons should be served with soup. Sliced lemon with fish. Cold beets, carrots, turnips, and the whites of hard-boiled eggs, stamped out with a fancy vegetable cutter, make a pretty garnish for cold meats. Toast cut into triangles makes a suitable garnish for many dishes.

Whipped cream is the most delicate garnish for all cold, light puddings; a little coloring may be added to part of it in order to vary the decoration.

Canning and Preserving.

Canning fruit is simply sterilizing and sealing in air-tight jars. Any fresh ripe fruit may be kept in this way. By observing a few general rules any housekeeper may preserve fruit successfully. 1st. Have good fruit, ripe and fresh. 2nd. Have air-tight jars—test by filling with water and inverting. 3rd. See that the jars have been well scalded and are free from odor of any kind. 4th. Have rims and covers at hand so that the jars may be sealed immediately when the fruit is put into them. 5th. Fill the jars till they overflow. 6th. Let the syrup simmer for a few minutes before putting in the fruit. 7th. Cook the fruit slowly so as to avoid breaking; place carefully in the jars, fill up with syrup and seal at once. A good method for canning fruit is to cook the fruit in the jars, by placing them in a boiler or kettle of water with a wire frame or something underneath to avoid breaking. Fill the jar with fruit; pour over a syrup of the desired consistency, screw on the top loosely—so as to allow the gas to escape—and place in the boiler; fill the boiler with cold water up to the rim of the jar and bring slowly to boiling point. Allow small fruits to remain 10 minutes, and peaches, pears, etc., 15 minutes after the water boils. Remove the tops, fill to overflowing with boiling syrup, and seal at once. By this method fruit retains the flavor somewhat more than by cooking in an open kettle. An average syrup for canning fruit is made by adding a pound of sugar to a pint of water (see rule 6). In order to prevent fruit jars from cracking, wring a cloth out of cold water on which the jar should be placed before filling with the hot fruit, or by placing a silver spoon or fork in the jar before putting in the syrup, fruit or jelly.

Always see that the tops are screwed on tightly before putting the jar away in a cool place, which should not be done until the fruit has become cold.

Preserving.

Preserving differs from canning in the amount of sugar used; otherwise the method is similar. Preserves are usually made from equal weights of sugar and fruit, and cooked at least 20 minutes.

Jellies.

Fruit jellies are made of equal parts of clear fruit juice and sugar. Crab apples, currants, and quinces are the most reliable fruits for jelly. Cook the fruit—currants may be mashed and drained without cooking—until soft. Drain over night through a flannel bag. In the morning measure 1 pint of sugar for each pint of juice. Heat the sugar in a large earthen bowl in the oven, stirring often to prevent burning. Let the juice boil 20 minutes; then add the hot sugar and boil about 5 minutes longer, or until it thickens when dropped from a spoon.

SUGGESTIONS FOR YOUNG HOUSEKEEPERS.

Carefully supervise the daily dietary so that a reasonable proportion of the necessary food elements may be provided. See that the proportion of proteid is one part to four of carbohydrates and fats. Adapt the dietary to the season and climate. Do not waste time and money in preparing rich puddings, entrees, cakes, etc., when fresh fruit, vegetables, salads, etc., are so much more nutritious, economical and convenient. Arrange to have a variety

of food—different kinds of meat, fish, and poultry—cooked in various ways. See that suitable food is provided for the children; especially pure milk and food containing mineral salts. Do not allow children to use tea, coffee, or other stimulants. A glass of hot milk (not boiled) is the best stimulant for a child when wearied with study or over exertion of any kind.

See that the water which has stood in the pipes over night is drawn before filling the tea-kettle for breakfast, or using the water for porridge or other purposes. Rinse the tea-kettle every morning before using. Never use water from the hot tank for cooking. See that the water used for drinking purposes is pure; if suspicious, either have it filtered or boiled before using. Do not allow soiled rags, dish cloths or towels to lie around the kitchen. Wash and scald the dish cloths and towels after each dish washing, hanging them outside to dry —if possible. Keep plenty of clean towels; some fine ones for glass and china, coarser ones for general use. Have special cloths for kitchen use. Keep a holder within reach of the oven so as to avoid burning the fingers, or using an apron. See that a kettleful of boiling water is poured down the sink pipes every day.

All boxes, jars and shelves in which food is kept, must be kept scrupulously clean and well aired. The refrigerator requires special attention; see that the drain pipe and interior of ice-box are kept thoroughly clean. A stiff wire with a piece of cloth fastened on the end may be used to clean the drain pipe at least once a week. Do not have any closet under the sink or places of concealment for dirty pots and pans. Bowls which have been used for flour mixtures should be filled with cold water if not

washed immediately after using. Never put kitchen knives and forks into the dish water, as it loosens the handles; hold them in the hand and wash with the dish cloth. Burn all refuse, both for convenience and as a sanitary measure. If a refuse pail is used, it should be scalded frequently and a solution of carbolic acid, chloride of lime or other disinfectant used. Do not put pans and kettles half filled with water on the stove to soak, as it only hardens whatever may have adhered to the kettle and makes it more difficult to clean.

Dish Washing.

Many young housekeepers look upon dish washing as the "bug-bear" of the kitchen. It need not be disagreeable work; indeed the washing of china, glass and silver ware may be placed among the arts of housekeeping. It should be the ambition of every young housekeeper to know how everything pertaining to household management should be done, and how to do it; whether she has to do it herself or direct others.

One of the most important duties is dish-washing. A few simple rules may help to make this duty less objectionable. 1. Collect knives, forks and spoons by themselves. Scrape the dishes, empty the cups, and arrange neatly in the order in which they are to be washed. 2. Never pile dishes indiscriminately in a dish pan, as each kind requires separate treatment. 3. Have two pans half full of water; one with soapy water, the other with clear hot water for rinsing. 4. Wash the glassware first, in moderately hot water, slip the glasses in sideways so that the hot water may strike inside and outside at once,

which will prevent breaking. Rinse and wipe at once, as they will be much brighter and clearer than if allowed to drain. 5. If the glass is cut, use a brush to cleanse out all the grooves. As it is difficult to dry such glassware, it should be dipped in clear cold water after washing, and allowed to drain. 6. Always keep the towel between the hands and the glass so as to avoid finger marks. Rinse glasses which have contained milk in cold water before washing. 7. Next wash the silver and wipe at once; then the china, first in the hot suds, then rinse in the clear hot water; wipe while warm. 8. Change dish water often, especially if the dishes are greasy; and do not leave the soap in the water to waste and stick to the dishes. 9. Use fresh water for the kitchen crockery, and pots and pans. After wiping tinware, place it on the hearth to dry, as it rusts very easily. 10. Polish the knives with bathbrick, wood ashes or sandsoap. Wash, and wipe perfectly dry; hold in the hand and wash with the dish cloth; do not under any circumstances allow knives and forks to lie in hot water. Next wash the tray, the rinsing pan, the table and the sink. Finally, the dish towels, dish cloth and dish pan.

Pans in which fish or onions have been cooked should be washed and scalded, then filled with water, in which put a tsp. of soda. Place them on the top of the stove for ½ hour; this will remove the flavor of fish or onions. If the steel of knives or forks should become rusted, dip them in sweet oil and let stand for twenty-four hours, then rub with powdered quick-lime and the stain will be removed. Rub the ivory handles which have become stained, with whiting and spirits of turpentine.

Ventilation and Sanitation.

As pure air is one of the essentials of good health, it follows that one of the chief duties of a housekeeper is to see that the family supply of this necessary element is properly regulated. Very few housekeepers realize the importance of ventilation in promoting the general health and comfort of the family. As the scope of this book prevents anything further than a few suggestions or a brief outline of the principles underlying these important questions, we will adopt the rule followed in the preceding chapter, beginning with the cellar: 1. See that surface water is carried away from all sides, by either natural or artificial drains, and that the cellar is perfectly dry. Have enough windows in the cellar to secure plenty of light and air, and see that they are opened every day. 2. Have the cellar thoroughly cleaned and whitewashed with lime at least once a year, twice if possible, in the spring and fall. 3. Keep the coal in a dry place. 4. Do not allow decomposed vegetables, or old bottles, which may cause unpleasant odors, to accumulate in the cellar. Unless there is a special cellar for vegetables, where they may be kept at a proper temperature and carefully looked after, it is much better for the housekeeper to purchase in small quantities. Remember the ventilation of the cellar is of the greatest importance, and should never be neglected.

One of the most noted authorities in America, on the question of ventilation, says: "The three important objects are, (1) To provide an abundance of pure air in every part of the house; (2) To avoid drafts, either hot or cold; (3) To provide means of escape for foul air and

odors." As before stated, much of the vigor, comfort and happiness of the family depends upon attention to these matters. Next to the cellar, we will take the living and sleeping rooms, which should be thoroughly aired every day, not simply by opening the window a few inches at the bottom, or—as in some double or outside windows—by a little opening a few inches wide; but by causing a circulation of air in the room, and providing an outlet for foul air near the ceiling, which may be done by lowering the window from the top. An outlet for foul air is quite as important as an inlet for fresh air.

If there is a skylight at the top of the house, it should be kept open a few inches all the time as an outlet for impure air; an attic window will serve the same purpose. Have doors and windows so arranged that a draft may be made possible when needed to change the air of a room quickly, or in airing bedclothes; two windows being of course more desirable. After dressing in the morning, open the window of the sleeping room, top and bottom; turn back the clothes over one or two chairs; place pillows and mattress where they will have a current of fresh air; also open the closet door. Do not allow water to remain in a bedroom more than twenty-four hours.

When a sleeping room has been used for a sewing or sitting room during the day, it should be thoroughly aired before bedtime. Open the bathroom window frequently, top and bottom, for a few minutes, so as to allow the air to escape out of doors instead of into other parts of the house. A nursery, sitting room or school room, which has been occupied by a number of people, should have the windows open, top and bottom, while the occupants are at meals or elsewhere. A room which has been

occupied as a family sitting room during the evening should be aired by the last member of the family to retire, in order to prevent the impure air making its way through the house during the night.

Special attention should be given to kitchen ventilation. In order to prevent kitchen odors from penetrating through the other parts of the house, it is necessary to have an outlet for steam and impure air near the ceiling in the kitchen. If windows are placed so as to secure a draft, they may be opened at the top only, when they will serve the purpose admirably. There should be a ventilating flue in all kitchen chimneys. In building a house, see that register ventilators are placed in the kitchen on different walls, which may be closed in very cold weather.

Laundry Work.

As the first essential of laundry work is a plentiful supply of water, a word concerning that necessary article may not be out of place. Pure water is a chemical compound of hydrogen and oxygen. It has great absorbent and solvent powers, therefore pure water is seldom found. The first fall of any shower is mixed with the impurities of the air; among these may be acids, ammonia and carbon in the form of soot and creosote. It is these impurities which cause the stain left when rain water stands on the window-sill or other finished wood. Rain water absorbs more or less carbon dioxide from various sources, and soaking into the soil often comes in contact with lime, magnesia and other compounds. Water saturated with carbon dioxide will dissolve these sub-

stances, forming carbonates or other salts which are soluble; such water is known as "hard."

Water for domestic uses is called either "hard" or "soft," according to the amount of salts which it may contain. When soap is added to hard water, the new compound formed by the union of the lime with the fatty acid of the soap is insoluble, and is deposited upon the surface of any article with which it comes in contact. This is the reason why "hard" water requires more soap when used for laundry work. It is much better to soften the water by the addition of alkalies, ammonia or sal-soda before using for laundry purposes than to depend entirely upon soap for cleansing.

Another important material used in the laundry is soap. In purchasing soap, it is safer to choose the make of some well-known firm, who have a reputation to lose if their products are not good; and for anything stronger than soap, it is better to buy sal-soda and use it knowingly than to trust to the various packages so extensively advertised. Washing soda should always be dissolved in a separate vessel, and added to the water to be used. Ammonia may be used, but its too frequent use will yellow bleached fabrics. Borax is an effectual cleanser, disinfectant and bleacher. It is more expensive than ammonia or soda but is the safest alkali to use. Turpentine is valuable in removing grease; 1 tbsp. to a quart of water will serve for washing silks and other delicate materials. It should never be used in hot water.

Removing Stains.—All spots and stains should be taken out before the clothes are put into the general wash to be treated with soap. Fruit stains are the most

frequent and the most indelible, when neglected. The composition of fruit juice is readily dissolved by boiling water. Stretch the stained part over an earthen dish and pour boiling water upon the stain until it disappears. If fruit stains are allowed to remain, they will require an acid, or in some cases a bleaching liquid like chloride of lime to remove them. Wine stains should be immediately covered with a thick layer of salt. Boiling milk may be used for taking out wine or fruit stains. Medicine stains usually yield to alcohol. Iodine dissolves in ether or chloroform.

Coffee, tea and cocoa stain badly; the latter, if neglected, will resist to the destruction of the fabric. These all contain tannin, besides various coloring matters, and are "fixed" by soap and water. Clear boiling water will often remove fresh coffee and tea stains, although it is safer to sprinkle the stains with borax and soak in cold water first. An alkaline solution of great use and convenience is Javelle water. It will remove stains and is a general bleacher. It is composed of 1 lb. of sal-soda with $\frac{1}{4}$ lb. of chloride of lime in 2 quarts of boiling water. When the substances have dissolved as much as they will, and become cool and settled, pour off the clear liquid and bottle it for use. Be careful not to allow any of the solid portions to pass into the bottle. Use the dregs for scouring unpainted woodwork, or to cleanse waste pipes. When a spot is found on a white table-cloth place under it an inverted plate. Apply Javelle water with a soft tooth brush (the use of the brush protects the skin and the nails). Rub gently till the stain disappears, then rinse in clear water and finally in ammonia. Blood stains require clear cold or tepid water;

hot water and soap render the red coloring matter less soluble. When the stain is nearly gone soap and hot water may be used. Stains from meat juice should be treated in the same way. When blood is mixed with mucous, as in the case of handkerchiefs, it is well to soak the stains for some hours in a solution of salt and cold water—2 tablespoonfuls to a quart. Grass stains dissolve in alcohol. If applied immediately, ammonia and water will sometimes wash them out.

The following methods have proved successful, and may be tried where colors are likely to be affected by alcohol. Molasses, or a paste of soap and cooking soda may be spread over the stain and left for some hours, or the stain may be kept moist in the sunshine until the green color has changed to brown, when it will wash out in pure water. Mildew requires different treatment from any previously considered. Strong soap suds, a layer of soft soap and pulverized chalk, or one of chalk and salt, are all effective, if in addition the moistened cloth be subjected to strong sunlight, which kills the plant and bleaches the fibre. Javelle water may be tried in cases of advanced growth, but success is not always assured. Some of the animal and vegetable oils may be taken out by soap and cold water, or dissolved in naphtha, chloroform, ether, etc. Some of the vegetable oils are soluble in hot alcohol (care being taken that the temperature be not raised to the point of igniting). Vaseline stains should be soaked in kerosene before water and soap touch them.

Ink spots on white goods are the same in character as on colored fabrics. Where the ink is an iron compound, the stain may be treated with oxalic, muriatic or hot

tartaric acid, applied in the same manner as for iron rust stains. No definite rule can be given, for some inks are affected by strong alkalies, others by acids, while some will dissolve in clear water. Red iron rust spots must be treated with acid. Fill an earthen dish two-thirds full of hot water and stretch the stained cloth over this. Have two other dishes with clear water in one and ammonia water in the other. The steam from the hot water will furnish the heat and moisture favorable for chemical action. Drop a little muriatic acid on the stain; let it remain a moment, then lower the cloth into the clear water. Repeat until the stain disappears. Rinse carefully in the clear water and finally immerse in the ammonia water, that any excess of acid may be neutralized and the fabric protected. Salt and lemon juice are often sufficient for a slight stain.

Many spots appear upon white goods, which resemble those made by iron rust, or the fabrics themselves acquire a yellowish tinge. This is the result of the use of blueing and soap, where the clothes have been imperfectly rinsed. Therefore, if all dirt is removed, and the clothes thoroughly rinsed from all soap or alkalies used in removing the dirt, and exposed for a long time to air and sunshine, the use of blueing is unnecessary. In cities, where conveniences for drying and bleaching in the sunshine are few, a thorough bleaching two or three times a year is a necessity; but in the country it is wiser to abolish all use of blueing and let the sun, in its action with moisture and the oxygen of the air, keep the clothes white and pure. Freezing aids in bleaching, for it retains the moisture upon which the sun can act so much longer. When clean grass, dew and sunshine are not available,

use a bleaching powder. Directions for the use of the powder usually accompany the can in which it is bought. Care must be taken to completely rinse out the acid present in the powder. Grease is more quickly acted upon by hot water than by cold, but other organic matter is fixed by the hot water. An effective method is to soak thoroughly the most soiled portion of the clothes, fold these together towards the centre, roll the whole tightly and soak in cold water. The water should just cover the articles. In this way the soap is kept where it is most needed, and not washed away before it has done its work. When the clothes are unrolled, the dirt may be washed out with less rubbing. Too long soaking, when a strong soap is used, will weaken the fabric.

Whether to boil clothes or not, depends largely upon the purity of the materials used and the care exercised. Many feel that the additional disinfection which boiling insures, is an element of cleanness not to be disregarded, while others insist that boiling yellows the clothes. This yellowness may be caused by impure material in the soap, the deposit of iron from the water or the boiler; the imperfect washing of the clothes, that is, the organic matter is not thoroughly removed. The safer process is to put the clothes into cold water, with little or no soap, let the temperature rise gradually to boiling point and remain there for a few minutes. Soap is more readily dissolved by hot than by cold water, hence the boiling should help in the complete removal of the soap, and should precede the rinsing. One tablespoonful of borax to every gallon of water added to each boilerful, serves as a bleacher and disinfectant. Scalding or pouring boiling

water over the clothes is not so effectual for their disinfection as boiling, because the temperature is so quickly lowered.

The main points in laundry cleansing seem to be: (1) The removal of all stains; (2) Soft water and a good quality of soap; (3) The use of alkalies in solution only; (4) Not too hot nor too much water, while the soap is acting on the dirt; (5) Thorough rinsing, that all alkali may be removed; (6) Long exposure to sunlight, the best bleacher and disinfectant.

Washing of Woollens.

All wool goods require the greatest care in washing. The different waters used should be of the same temperature, and never too hot to be borne comfortably by the hands. Soap should always be used in the form of a solution. No soap should be rubbed on the fabric, and only a good white soap, free from resin, or a soft potash soap is allowable. Make each water slightly soapy, and leave a very little in the fabric at the last rinsing, in order to furnish a dressing as nearly like the original as possible. Ammonia or borax is sometimes used in preference to soap. For pure white flannel borax is the most satisfactory, on account of its bleaching quality. Only enough of any alkali should be used to make the water very soft.

Wool fibres collect much dust, and should therefore be thoroughly brushed or shaken before the fabric is put into the water. Woollen fabrics should be cleansed by squeezing, and not by rubbing. Wool should not be wrung by hand. Either run the fabric smoothly through

a wringer or squeeze the water out, so that the fibres may not become twisted. Woollen articles may be dried more quickly by rolling the article tightly in a thick, dry towel or sheet, and squeezing the whole till all moisture is absorbed. Shake the article thoroughly before placing to dry. Woollen goods should not be allowed to freeze, for the teeth become knotted and hard.

Colored Cottons.

Colored cottons should have their colors fixed before washing. Salt will set most colors, but the process must be repeated at each washing. Alum sets the colors permanently, and at the same time renders the fabric less combustible, if used in strong solution after the final rinsing. Dish cloths and dish towels must be kept clean as a matter of health, as well as a necessity for clean, bright tableware. The greasy dish cloth furnishes a most favorable field for the growth of germs. It must be washed with soap and hot water and dried thoroughly each time. All such cloths should form part of the weekly wash and receive all the disinfection possible, with soap, hot water and long drying in the sunshine and open air. Beware of the disease-breeding, greasy, damp, dish cloth hung in a warm, dark place. Oven towels, soiled with soot, etc., may be soaked over night in just enough kerosene to cover, then washed in cold water and soap.

Laundry tubs should be carefully washed and dried. Wooden tubs, if kept in a dry place, should be turned upside down, and have the bottoms covered with a little water. The rubber rollers of the wringer may be kept clean and white by rubbing them with a clean cloth and

a few drops of kerosene (coal oil). All waste pipes, from that of the kitchen sink to that of the refrigerator, become foul with grease, lint, dust and other organic matters which are the result of bacterial action. They are sources of contamination to the air of the entire house and to the food supply, thereby endangering health.

All bath, wash basin and water-closet pipes should be flushed generously (as stated in a previous chapter) once a day at least. The kitchen sink pipe and laundry pipes should have a thorough cleaning with a strong boiling solution of washing soda daily, and a monthly flushing with crude potash. The soda solution should be used for cleansing the drain pipe of the refrigerator.

CARING FOR INVALIDS.

One of the first considerations in caring for an invalid is the ventilation of the sick room. Care must be taken that the air is not vitiated by anything in the room, such as a kerosene lamp, wilted cut flowers, soiled clothing, etc. The bed should be so arranged as to avoid a draft —especially when airing the room. If the room is too small to allow this, a very good way to protect the patient is to raise an umbrella and place it over the head and shoulders; over this put a blanket while the room is being aired; allowing it to remain until the room has reached the desired temperature again. Never turn the wick of a lamp below the point of free combustion in the room of either sick or well, as the odor is not only disagreeable but injurious.

One of the most important essentials in a sick room is perfect cleanliness of the room, the bed linen and clothing of the patient. Never air or dry cloths or garments in the sick room. Cover the broom with a damp flannel cloth in sweeping, so as to avoid noise and prevent the dust from rising. Avoid noise in placing coal on the fire by putting the coal in a paper bag, placing bag and all upon the fire. Do not allow loud talking or discussion in the sick room; neither is whispering desirable, as it is apt to irritate the patient. Do not consult the patient about the food, but see that tempting, wholesome varieties are provided, in accordance with the doctor's orders concerning the diet. Serve food in small quantities, and either hot or cold, as the article may require. A warm dish which should be hot, and a tepid drink, or food, which should be cold, is one of the most objectionable and unappetizing forms of serving food. Do not allow fresh fruit, which is intended for the patient, to remain in the sick room, but keep in a cool place and serve when needed. Never visit a sick room when in a violent perspiration or with an empty stomach, as the system at that time is more susceptible to contagion.

One of the most important qualifications in a nurse is a thorough knowledge of the nature, use and digestibility, as well as the best methods of preparing the different kinds of food, so as to adapt them to the different forms of disease. In some cases, when the system has been overtaxed, either mentally or physically, a complete rest is necessary, and the diet should be food which merely satisfies the hunger—neither stimulating nor especially nourishing. Such foods come under

the head of gruels, soups, jellies, fruit and drinks. On the other hand when a patient has become wasted from a long continued illness and requires building up, more nourishment is required to supply the waste. In some cases the food must be given in concentrated form. Milk is one of the most valuable foods in this class; sometimes it requires the addition of a little pepsin in order to facilitate digestion; sometimes the addition of a pinch of salt makes milk not only more agreeable to the patient, but aids digestion. Eggs, either lightly boiled or in egg-nog, are easily digested and very nourishing. Meat and milk soups, farina and oatmeal gruel, port wine jelly, albumen and milk (which is the white of egg and milk shaken together), and in some cases a bit of carefully broiled steak or chop, with dry toast, are suitable foods for this class of patient. In convalescence, any well cooked, easily digested food may be given. Fried food, rich puddings and pastry must be carefully avoided.

People with consumptive tendencies should eat wholesome, easily digested food, with plenty of fat, such as cream, butter, fat of bacon and of roast beef, mutton, olive oil, salads, cornmeal and cereals, and take plenty of outdoor exercise. Soups which have in them cream or milk are better for invalids than those containing a greater amount of gelatine. A few simple recipes are given, which are suitable for invalids.

Beverages.

Barley Water.—Take 2 ounces of pearl barley and wash well with cold water at least 2 or 3 times. Put into a saucepan with 1½ pint of water, and allow it to

boil for 20 minutes closely covered. Strain and sweeten, and flavor with lemon juice; a little lemon peel may be added while boiling if desired.

Apple Water.—Take 2 or 3 tart apples. After baking, put them in a bowl and pour over them 1 cup of boiling water, strain and sweeten to taste; serve when cold.

Flax Seed Tea.—One-half cupful of flax seed—which has been carefully washed in cold water—to 1 quart of boiling water; boil slowly 30 minutes, move to the back of the stove and allow it to remain 10 or 15 minutes longer. Strain, and flavor to taste with lemon juice and sugar.

Lemonade.—Slice 1 lemon, add 1 tablespoonful of sugar, press the lemon and sugar, add 1 cup of boiling water. Strain and serve hot or cold as required.

Orange Water.—Made the same as lemonade.

Meat Extractives.

Beef Juice is prepared by broiling until the meat is heated through, then placing it in a lemon squeezer and pressing until all the juice is extracted. Heat until warm enough to be palatable, add a little salt, and by way of variety it may be poured over a slice of hot dry toast.

Beef Tea.—Cut juicy pieces of steak—the round steak is the best—into small pieces, cover with cold water and heat gradually to 160 F. Allow it to remain at this temperature 10 or 15 minutes. Press, strain, and flavor with salt and pepper.

Beef Tea (No. 2).—Put a pound of finely minced beef into a glass fruit jar, add a pint of cold water. Let it stand for an hour, stirring and pressing occasionally. Place the jar in a kettle of water; place over the fire and allow the water to reach boiling point. Move back where the water will just simmer for an hour, keeping the jar closely covered. Strain the beef tea through a fine wire strainer; allowing the fine sediment to pass through, which should be drunk with the liquid. Flavor with salt. (For an especially strong beef stimulant, see recipe for Bouillon, in a former chapter.)

Beef Essence.—(This method is highly recommended.) One ounce of finely chopped fresh beef, free from fat; pour over it 8 ounces of soft water, add 5 or 6 drops of dilute hydrochloric acid, and 50 or 60 grains of common salt, stir well, and leave for 3 hours in a cool place. Strain the fluid through a hair sieve, pressing the meat slightly; adding gradually toward the end of the straining, 2 ounces of water. The liquid is of a bright red color, tasting like soup. It should be served cold, in a small quantity at a time. If preferred warm it must not be put on the fire, but heated in a covered vessel placed in hot water.

Chicken Broth.—Singe and clean a small chicken. One-half of the chicken may be used for broth, and the other half for broiling or a fricassee. Disjoint, and cut the meat into small pieces. Break or crush the bones. Dip the feet into boiling water and scald until the skin and nails will peel off (as the feet contain gelatin). Cover the meat, feet and bones with cold water; heat very slowly, and simmer till the meat is tender. A few minutes

before removing from the fire add salt and pepper to taste, also ½ teaspoonful of sugar. Strain, and when cool remove the fat. When needed, heat the necessary quantity, and if desired very clear add the shell and white of 1 egg. Let this boil slowly 3 or 4 minutes. Skim and strain through a fine cloth. A little lemon juice may be added to vary the flavor. This may be poured into small cups and kept in a cool place; or if the patient can take it some of the breast meat may be cut into small pieces and moulded with it. If the broth is served hot, it should not be cleared with the egg.

Mutton Broth.—Chop 1 pound of lean, juicy mutton very fine; pour over it 1 pint of cold water. Let it stand until the water is very red, then heat it slowly. Allow it to simmer 10 minutes. Strain, season, and if liked thick, 2 tablespoonfuls of soft boiled rice may be added; or it may be thickened with a little cornstarch wet with cold water and stirred into the hot broth. Serve very hot. If there is not enough time to cool the broth and reheat, the fat may be removed by using a piece of tissue, coarse brown or blotting paper, which, by passing over the surface, will remove any fat which cannot be taken off with a spoon.

Oatmeal Gruel.—To 1 quart of boiling water add 2 tablespoonfuls of oatmeal, salt to taste. Boil 1 hour, strain and serve with or without milk. Another method is to cover the oatmeal with cold water. Stir well; let it settle, then pour off the mealy water into a saucepan. Then boil the water.

Egg Soup.—Put 1 ounce of sago with ½ pint of milk into a double boiler, and cook 20 minutes. Strain

through a sieve and add ½ pint of beef extract (or Bouillon). When hot take it from the fire and stir gradually into it the yolks (well beaten) of 2 eggs. Season to taste, and serve. Chicken or mutton broth may be used.

Albumen and Milk.—Put the white of 1 egg into ½ pint of milk. Pour into a pint fruit jar, screw on the top tightly and shake well for 1 minute, when it should be light and smooth. Serve at once. A pinch of salt may be added if desired.

Egg-Nog.—Beat 1 egg until very light, add 2 teaspoonfuls of sugar, and beat again; add ⅔ cup of cold milk, mix well, and if ordered, 2 teaspoonfuls of brandy may be added. A pinch of salt added to the yolk of the egg makes it more palatable.

Orange Soup.—Soak the juice of an orange, ⅓ of the grated rind, and 1 teaspoonful of lemon juice for ½ hour. Strain, and make the liquid up to a cupful with water. Bring to boiling point and add two level teaspoonfuls of arrowroot, moistened with a very little cold water, stirring constantly until it thickens. When it reaches the boiling point, add 1 tablespoonful of sugar, turn into a bowl and stand away to cool. Serve very cold. (Any tart fruit juice may be used for this soup.)

Arrowroot Gruel.—Dissolve 2 level teaspoonfuls of arrowroot in a little cold water, add 1 cup of boiling water, cook for a few seconds; take from the fire, add a tablespoonful of sugar, 1 tablespoonful of lemon juice. (One egg may be beaten, white and yolk separately, until very light, mix them carefully and pour over the egg slowly one pint of hot arrowroot gruel, made as above; stir until well mixed.)

Rice Water or Jelly.—Pick over and wash carefully 2 tablespoonfuls of rice, and cook in water until the rice is dissolved. Add salt and sugar to taste. If intended to jelly, add lemon juice and strain into a mould. Serve cold with cream and sugar. If to be used as a drink, add enough hot water to make a thin liquid, and boil longer. A little stick cinnamon may be added a few minutes before straining. Serve hot or cold.

Stewed Figs.—Take some choice figs, wash, then cover them with cold water. Soak over night. In the morning bring them to boiling point, and keep them over the fire, just simmering for 20 minutes, or until the figs are plump and soft. Lift them out carefully, and boil down the liquor until it forms a syrup. Pour this over the figs and serve cold. Whipped or plain cream may be served with them.

Jellied Chicken.—Take a young, tender chicken. Prepare and disjoint it as for a fricassee. Put a bay leaf, a stock of celery about 4 inches long, and 2 whole pepper corns in the bottom of a bowl. Then put in the chicken. Stand the bowl in a pot of boiling water, being careful that the steam shall not drip, or the water boil over into the chicken. Cover the pot closely and keep the water boiling until the meat is tender enough to allow the bones to slip out. Remove the skin and bones and put the remainder of the chicken into a pint bowl or mould. Season the remaining liquor with salt, and strain over the meat. Stand in a cool place to harden. (Do not add water to the chicken when cooking.)

Raw Meat Sandwiches.—Three ounces of raw beef, which may be chopped very fine and rubbed through a

hair sieve or scraped from a slice of steak. Mix with it 1 ounce of fine bread crumbs, 1 teaspoonful of sugar, pepper and salt to taste. Spread it between thin slices of brown or white bread and butter. (A few drops of lemon juice may be added if the flavor is liked.)

Broiled Steak, Hamburg Steak, Broiled White Fish, Stews, Etc. (See recipes in preceding chapters.)

A FEW GENERAL HINTS FOR SCHOOL CHILDREN.

"Too much attention cannot be given by parents to the diet of school children, or by teachers to the diet of pupils under their care in boarding schools and colleges. The average age of school children is from six to sixteen years. During this time both mind and body are undergoing development. Throughout school period the growth of the body is continued until almost completed. There are unusual demands, therefore, upon the functions of absorption and assimilation. The food must be abundant, and of the character to furnish new tissue, and to yield energy in the form of heat and muscular activity. The food should also contain salts of lime to meet the requirements of formation of the bones and teeth. Many children acquire habits of dislike for certain articles of food, which become so fixed in later life that they find it very inconvenient, especially when placed in circumstances, as in travelling, where one cannot always obtain the accustomed diet; it therefore is unwise to cultivate such habits, which are often a serious obstacle to normal development.

"A physician is often baffled in the treatment of a severe disease by the vitiated taste of the patient. Many cases of anæmia and chlorosis, which are so commonly seen in young girls, are directly traceable to a faulty diet. It should be the imperative duty of all teachers to consider the responsibility of rightly developing the physical constitutions of those entrusted to their care. They should remember that the mind keeps on developing long after the body, and that the period under discussion is one in which the constitution of the individual is established for the remainder of life. At this stage success in digestion and assimilation is of greater importance than success in mental attainments." (Thompson.)

An important consideration in school diet is to avoid monotony, which becomes so common from economic reasons, or more often from carelessness. It is so much easier to yield to routine and force of habit than to study the question. The hours for study and for meals should be so regulated that sufficient time will be allowed before each meal for children to wash and prepare themselves comfortably without going to the table excited by hurry, and they should be required to remain at the table for a fixed time, and not allowed to hastily swallow their food in order to complete an unfinished task or game. An interval of at least half an hour should intervene after meals before any mental exertion is required. Constant nibbling at food between meals should be forbidden; it destroys the appetite, increases the saliva, and interferes with gastric digestion.

The habit of chewing gum cannot be too strongly condemned, both for the reason given in the preceding

sentence and for its effect upon the muscles and nerves. It is being more and more realized by the public in general, that the breaking down of health at school is more often due to impoverished nutrition than to overwork. Delicate children should not be allowed too long intervals between meals, as for instance, the evening meal at six o'clock and breakfast the following morning at seven or half past. A glass of milk and a piece of whole wheat bread and butter should be given—if they awaken—during the night. Delicate children whose appetites are poor, and who do not do proper justice to their regular meals, should be given an extra allowance of hot broth or hot milk with bread and butter, between meals.

These rules are applicable in cases of children who, during one or two years, seem to develop with extraordinary rapidity, growing sometimes two inches or more in six months. The demands of this rapid growth must be met by proper nutrition, or serious subsequent impairment of vitality may result. Such children should have their meals made tempting by good cooking and pleasant variety, as well as an agreeable appearance of the food. Meat which is carved in unsightly masses and vegetables which are sodden and tasteless will be refused, and an ill attempt is made to supply the deficiency in proper food by eating indigestible candy, nuts, etc. Children often have no natural liking for meat, and prefer puddings, pastry or sweets when they can obtain them; it is therefore more important that meat and other wholesome foods should be made attractive to them at the age when they need it.

SUGGESTIONS FOR SCHOOL CHILDREN'S DIET.

If early rising is insisted upon, a child should never be set at any task before breakfast, especially in winter; and if it is not expedient to serve a full breakfast at half-past six or seven, the child should be given a bowl of milk and bread, a cup of cocoa with a roll or other light food. Breakfast may be served later, after the first exercises of the morning, and should consist of porridge of wheaten grits, hominy, fish, eggs, fruit (raw or cooked), bread and butter. Dinner, which should always be served near the middle of the day, should comprise meat, potatoes, one or two green vegetables, some form of light pudding or sweet. Supper, it is generally admitted, should comprise easily digested articles of food; such substances as pastry, cheese and meats are better omitted; it should consist of a porridge, with milk or cream, or a light, farinacious pudding of rice, tapioca or sago, with bread and butter, and some simple form of preserve, stewed apples or prunes, or very light, plain cake. A good bowl of nutritious broth—or soup—with bread or crackers, may be substituted for the porridge or pudding. It will sometimes be found best to serve this meal at seven or half-past seven o'clock; in this case the child should be given a slice of bread and butter or a glass of milk (drinking it slowly), at half-past four or five.

Some of the more important articles of school diet require special mention; the following extract from Dr. Thompson's Practical Dietectics may prove helpful:—

Bread.—"Bread, as a rule, should be made of whole meal, but must not be too coarse. The advantage of this

bread for children consists in its containing a larger proportion of salts, which they need, than is found in refined white flour, and butter should be freely served with it to supply the deficiency of fats which exist in meat. Children need fat, but they do not digest meat fat well, as a rule, and are very apt to dislike it. They will often take suet pudding, however, when hot mutton fat wholly disagrees with them."

Milk.—"Milk should be freely supplied, not only in the form of puddings and porridges, but as an occasional beverage, and children should be made to understand that when hungry, they can obtain a glass of milk, or a bowl of crackers or bread and milk, for the asking. Chambers says, 'The best lunch that a growing young man can have is a dish of roast potatoes, well buttered and peppered, and a draft of milk.'"

Meat.—"Meat may be given twice a day, but not oftener. It may sometimes be advisable to give it but once a day when fish or eggs are supplied; it should, however, be given at least once daily, to rapidly growing children."

Sweets.—"The greater number of children have a natural craving for sweets."

The energy developed in active childhood necessitates the consumption of a larger proportion of sugar than is required by adults. The craving of children for confections, candy, etc., furnishes a true indication of the actual requirements of nature, and it must be admitted that a certain amount of wholesome candy not only does most children no harm, but may serve them as an excellent food. The main difficulty with such forms of

sugar, however, is that children are not furnished with a proper proportion of sugar with their meals, and the meals themselves are not so regulated as to prevent their becoming very hungry between times; consequently, if they can obtain candy, which satisfies them for the time, they are very apt to eat too much, with the result of producing more or less dyspepsia and diminishing the normal appetite. Alcohol in every form should be absolutely excluded. If given during early youth, it is particularly prone to develop a taste which may become uncontrollable in later years. (Children should not indulge in tea and coffee.)

Exercise.—As a general rule, active muscular exercise in children disturbs their digestive process far less than mental effort, when taken immediately after meals; and every adult is familiar with the romping which children can undertake straightway after dinner, often, though not always, with impunity, whereas a proportionate amount of exercise on the part of an adult might produce a severe dyspeptic attack.

Much of the headache and inattention of pupils during school hours is the direct result of an ill-regulated diet, or from vitiated appetites.

INFANTS' DIET.

One of the most important subjects included in a domestic science course of study is the feeding and care of infants. A subject requiring special intelligence and consideration; one which embodies the condensed information of the preceding chapters, and is the foundation upon which the future physical structure is built.

It is not upon the mother alone that the baby depends for care and attention. Many young girls, especially elder sisters and nurse-maids, have this responsibility placed upon them when they are little more than children themselves. To these, as well as to young mothers, the following suggestions may prove helpful.

The first demand of an infant is for food, and upon the quality and quantity of the article provided depends the health of the child, as well as the comfort of the household.

Milk is the only food required by an infant until it is, at least, seven or eight months old, or until sufficient saliva is secreted to assist digestion; some authorities say one year, others until the child has sufficient teeth with which to masticate food. If nature's supply is not available, or sufficient, the best substitute is cow's milk. As cow's milk contains less sugar of milk, and fat (cream), than human milk, these must be supplied. Being more acid than alkaline, this must be corrected by the use of lime water.

There is more casein (curd) in cow's milk than in mother's milk, therefore water must be added to reduce this. The following proportions have been submitted as

a digestible form of preparing cow's milk for young infants (Dr. Meigs):—

Cream, 2 tbsps.	Lime water, 2 tbsps.
Milk, 1 tbsp.	Milk-sugar water, 3 tbsps.

One quarter of this amount to be given every two hours during the day, and once or twice at night.

After the baby is a week old, the quantity may be increased to one-half at each meal; at two months the whole amount prepared may be given at once.

The proportion of milk should be gradually increased, and the water and cream decreased, until at two months old the proportion should be:—

3 tbsps. milk.	1 tbsp. lime water.
1 tbsp. cream.	3 tbsps. sugar water.

When six months old the quantity of milk is doubled. It should be increased every day until ten tablespoonfuls are given at a feeding.

Barley Water.

2 tbsps. pearl barley.	1 pt. boiling water.

Wash the barley carefully. Pour over it the boiling water. Let it simmer for two hours. Strain and sweeten with a pinch of sugar of milk.

Milk-Sugar Water.

½ oz. sugar of milk.	½ pt. boiling water.

Dissolve, and keep closely covered. It will not keep long, so should be made when required to use.

Lime Water.

Take a lump of lime weighing about one ounce. Put in a bottle with a quart of cold water (which has been

boiled). Shake the bottle well until the lime is dissolved, and let it stand for 12 hours. Pour the clear liquid into another bottle, being careful not to disturb the sediment. Keep carefully corked. Water will only absorb a certain quantity of lime, so there is no danger of its being too strong.

As cow's milk is more difficult to digest than mother's milk, it is sometimes necessary to substitute barley water in place of the lime water and milk, using the same amount of cream as given in recipe.

Malted Food.

2 oz. wheat flour or barley meal.
1¾ qts. water.
1 tsp. extract of malt.

Mix the flour to a paste with a little water, gradually add a quart of the water; put it in a double boiler and boil 10 minutes. Dissolve the malt extract in 4 tbsps. of the water (cold). Lift out the inner vessel and add the malt and remainder of the cold water. Let it stand 15 minutes, replace, and boil again for 15 minutes. Strain through a wire gauze strainer. (Half this quantity may be made.)

This preparation is used when both barley water and lime-water disagree. It must always be given with milk. It prevents the large tough curds forming, which is such an objectionable feature in using cow's milk.

Peptonized Milk.

In cases of especially weak digestion it may be necessary to peptonize the milk, which may be done as follows: Add 5 grains of extract of pancreas and 15

grains of baking soda to 1 pint of milk. (Tablets of pancreatin and soda may be used.)

After adding the peptonizing material put the milk in a double boiler or in a vessel which may be set in a larger one, holding water, as hot as the hand can bear being dipped into quickly, or about 115° Fah. Leave the milk in the hot water about 20 minutes, then place on the ice. If heated too long the milk will taste bitter.

The preparation given in recipe No. 1, or with the barley water added, may be peptonized.

Sterilized or Pasteurized Milk.

(See Milk, Chapter V.)

Put the amount of milk required for a meal into pint or half pint bottles, allowing for the number of times the child is to be fed in 24 hours. Use cotton batting as a stopper. Place a wire frame, or invert a perforated tin pie plate, in the bottom of a saucepan; stand the bottles on this, pour around them enough water to come well above the milk, cover the saucepan or kettle, and when the water boils lift the saucepan from the fire and allow the bottles to remain in the hot water for 1 hour. Keep in the ice box or stand them in cold water until needed. If milk is to be used during a long journey it will be necessary to repeat the above operation three times, letting the milk cool between each time.

Unless the milk is perfectly fresh, and has been handled with great care, it is safer to sterilize or pasteurize it. The former, if any doubt is entertained as to the quality of the milk, the latter in every case.

Temperature of Food.

Food should be "milk warm," or about 99° Fah., when given to a baby. Hot food is very injurious.

Nursing Bottles and Feeding.

Have two plain bottles with rubber tops, *without tubes.* Bottles with ounces and tablespoonfuls marked on them can be purchased, and are a great convenience in measuring the amount of food required.

After using the bottle, empty the remaining milk; rinse in cold water, then in *scalding water.*

If particles of milk adhere to the bottle use coarse salt or raw potato cut in small pieces. If the glass looks cloudy, add a little ammonia to the water. Turn the rubber tops inside out and scrub with a stiff brush; boil them every alternate day for 10 minutes.

Absolute cleanliness is a necessity in the care of a baby's food, bottles and rubber tops.

The bottle should be held, while the baby is feeding, in such a position that the top is full of milk. If air is sucked in with the milk stomach-ache will likely result.

Starchy food should not be given to a child until it is able to masticate. (See digestion of starch, Chap. VIII.)

Arrowroot, cornstarch, rice, etc., *must not be given to infants.*

Flour Ball.

Put a bowlful of flour into a strong cloth, tie it up like a pudding, and place it in a kettle of boiling water. Boil for 10 or 12 hours. When boiled turn it out of

the cloth and cut away the soft outside coating. When cool, grate the hard inside portion and use a teaspoonful at each feeding, for a baby 8 months old, increasing the amount for an older child. This may be prepared in the same manner as cornstarch or flour. The long boiling converts the starch into dextrine, which is more easily digested than starch. This is especially valuable in cases of diarrhœa, and may be used instead of barley gruel as a food.

Oatmeal Gruel.

Pound a cupful of oatmeal in a pestle or on a bread board. Put in a bowl and pour over it 1 pint of cold water. Stir it up, then let the mixture settle for a few minutes. Pour off the milky fluid, repeat this process. Boil this water for an hour, adding a pinch of salt, and use it to dilute the milk instead of water.

A thicker gruel may be made from oatmeal by allowing 1 tablespoonful to a cup of boiling water. Let it boil 1 hour, then strain through a wire strainer.

Farina Gruel.

1 tbsp. farina.
2 cups boiling water.
A spk. of salt.

Cook for 20 minutes; use as directed for oatmeal.

Beef Juice.

(See page 145.)

Beef juice is sometimes ordered for delicate babies. For a child 9 months old, 1 or 2 tablespoonfuls may be given once a day.

Albuminized Food.

When milk cannot be taken, albuminized food proves an excellent substitute.

Shake the white of 1 egg with ½ a pint of water (filtered or boiled and cooled) in a glass jar until they are thoroughly mixed. Add a few grains of salt.

Children do not require a great variety in their food. Give one article of diet at a time and see how it agrees before trying another.

After a child is a year old the various cereals may be given as porridge instead of gruel, with the addition of a little sugar.

Remember, all cereals should be thoroughly cooked (see page 83).

Biscuits.

Gluten, soda, oatmeal or Graham biscuits may be soaked in milk or given alone. Do not give the fancy or sweet biscuits to young children.

Eggs.

A properly boiled egg (see page 69) may be given every alternate day to a child 1 year old.

Junket.

Junket is much better for young children than custards or puddings, and sometimes agrees well with babies.

Take 1 pint of milk, heat it to 98° Fah., or milk warm. Add 1 teaspoonful of rennet and 1 teaspoonful of sugar.

Stir all together and let it stand in a warm place until it becomes as thick as jelly. Remove at once to a cool place or whey will appear.

Baked Potatoes.

Potatoes should not be given to a child under 2 years old in any other form than baked. The potash salts are the most valuable constituent, and are lost when they are peeled and boiled. They should be dry and mealy. A little salt, butter or cream should be added.

Macaroni.

(See page 85.)

Macaroni is an excellent food for young children.

Fruit.

Baked apples and the juice of an orange are the only fruits which should be given to children under two years of age.

Rice.

Rice is an excellent food for young children, but not for infants.

Ventilation.

Foul air is injurious to grown persons, but it is infinitely more dangerous to the sensitive organization of a child. Therefore special attention should be given to the ventilation of rooms occupied by a baby (see page 132).

Fresh air, wholesome food, regular bathing, and plenty of sleep will insure the normal growth of the average baby, and are within reach of every one who has the care of young children.

The writer is indebted to Miss Scovil, Superintendent of Newport Hospital, and one of the associate editors of the *Ladies' Home Journal*, for many of the above hints concerning the diet of infants.

Emergencies.

As frequent accidents occur during the performance of household duties, a few suggestions as to how slight injuries should be treated may prove useful to the young housekeeper.

Cuts.—A cut should be washed with cold water, covered with a small pad of cotton, bound up, and left alone. Should matter form, the bandage must be taken off, the wound bathed with carbolized water, 1-80, and a little carbolized vaseline spread on a bit of linen and laid over it. The washing and dressing should be repeated two or three times a day if there is much discharge.

Bruises.—A flannel wrung out of very hot water, and laid on a bruise, relieves the soreness.

For bruises on the face, apply ice. Brown paper wet in vinegar is an old-fashioned remedy. If the skin is broken, treat as a wound, with carbolized water and carbolized vaseline.

Sprains.—Both hot and cold treatment is recommended. Immerse the joint in water as hot as can be borne. Keep up the temperature by gradually adding more hot water. Let it soak for an hour or more. Then wrap in warm flannel, and surround with hot water bags or bottles.

Stings.—Bathe the part in ammonia, or baking soda and water; wet a cloth in the same, and bind over it.

Burns.—The best household remedies for burns are baking soda and carbolized vaseline. For slight burns

mix the soda to a paste with water, and spread thickly over the part; cover with linen or old cotton. This may be kept wet by squeezing water over it. If shreds of clothing adhere to a burn, they should be soaked with oil, and not pulled off until softened. If the skin is gone, spread carbolized vaseline on linen, and bind on the part until the doctor arrives.

In burns caused by acids, water should not be applied to the parts. Cover with dry baking soda.

If caused by an alkali, such as lye, ammonia, or quicklime, use an acid, as vinegar or lemon juice, diluted.

Poisoning.—For poison ivy, saturate a cloth in a solution of baking soda, or ammonia and water, and lay over the part.

When poison has been swallowed, the first thing to do is to get it out of the stomach. Secondly, to prevent what remains from doing more mischief. Give an emetic at once. One tbsp. of salt in a glass of *tepid* water; 1 tsp. of mustard, or 1 tsp. of powdered alum in a glass of tepid water. A tsp. of wine of ipecac, followed by warm water. Repeat any of these three or four times if necessary. The quantities given are for children; larger doses may be given to adults. It is well to give a dose of castor oil after the danger is over, to carry off any remnants of the poison that may have lodged in the intestines.

After a poison has burned the mouth and throat, plenty of milk may be given, also flour, arrowroot, or cornstarch gruel.

For drowning and other serious accidents, see Public School Physiology.

FURNISHING A CLASS-ROOM.

The furnishing of a class-room should be so complete that each pupil should be able to attend to the appointed task without delay. The furniture should consist of a stove, or range, gas stove if more convenient, a hot water tank or boiler, sink, table (side), towel rack, 2 dozen chairs, or seats with tablet arms, a cupboard or kitchen "dresser" for table ware, a large cupboard or arrangement for lockers, in which caps, aprons, etc., should be kept, a large table—horseshoe shape is the most satisfactory—with drawers, and space for rolling pin, bread board, etc., underneath. The table should be large enough to allow at least 2 ft. 6 in. for each pupil. Twenty pupils is the limit of a practice class. On the table should be placed at regular intervals, 10 gas burners with frame. The teacher's table should stand in the opening at the end of the table so that she may see each pupil while at work, and when demonstrating may be seen by each pupil.

The following list of utensils will be found sufficient for practice work for a class of 20 pupils.

Earthen, China and Glass Ware.

1 dinner set.
2 quart pitchers.
2 pint pitchers.
2 small oval baking dishes.
2 small round baking dishes.
4 4-quart bowls, with lips.
6 2-quart bowls, with lips.
4 1-quart bowls.
12 baking cups.
6 kitchen cups.
2 small platters.
2 medium size platters.
2 deep pie plates.
6 shallow pie plates.
2 jelly moulds.
1 teapot.
1 dozen quart gem jars.
1 dozen pint gem jars.
6 4-quart stone jars or crocks.
1 dozen fancy plates, and glass dishes for serving.

Woodenware.

1 wash-board.
12 small bread boards.
12 rolling pins.
2 chopping trays.
2 potato mashers.
1 potato ricer.
1 water pail.
1 scrubbing pail.
1 pail or bucket for refuse.
1 flour bucket, with cover.
6 wooden spoons—small.
1 2-gallon ice cream freezer.
1 broom.
1 whisk-broom.
1 crumb pan and brush.
1 floor scrubbing brush.
6 small scrubbing brushes.
1 stove brush.
1 pastry brush.
1 small refrigerator.
Spice boxes.
Dish mops.
Lemon squeezers, etc.

Agate Ware.

4 double boilers.
2 4-quart kettles.
2 2-quart saucepans.
4 1-quart saucepans.
4 pt. saucepans.
2 oval pudding dishes.
1 4-quart preserving kettle.
1 hand basin.
1 tea kettle.

Iron Ware.

1 spider.
1 griddle.
1 pan for meat.
1 pan for fish.
1 meat fork.
1 can opener.
1 meat cleaver.
2 wooden-handled spoons.
1 braising pan (cover).
Scales, etc.

Tin and Wire Ware.

2 large graters.
1 nutmeg grater.
12 flour dredges.
12 measuring cups.
1 funnel.
1 basting spoon.
1 wire broiler, for toast.
2 wire broilers, for steak.
1 wire soap dish.
3 Dover egg beaters.
3 small wire strainers.
1 large wire strainer.
1 flour scoop.
2 flour sifters.
1 gravy strainer.
1 colander.
2 dish pans.
2 2-qt. milk cans.

TIN AND WIRE WARE—*Continued.*

1 quart measure.
1 pint measure.
1 steamer.
6 small bread pans.
6 small jelly moulds.
1 set gem pans.
1 doz. muffin rings.
2 dustpans.
2 plain cake cutters.
1 doughnut cutter.
1 small biscuit cutter.
1 frying basket.
1 dipper.
2 long, shallow cake tins.
2 egg whisks.
1 round cake tin.
1 wire frame.
1 vegetable cutter.

MISCELLANEOUS.

1 doz. dish towels.
2 floor cloths.
12 holders.
Cheese cloth.
Pudding cloth.
Needles.
Twine.
Scissors.
Skewers.
Screw driver.
Corkscrew.
1 doz. knives and forks.
Hammer.
Tacks and Nails.
Ironing sheet and holder.
Coal scuttle.
Fire shovel.
Coal sieve.
Ash hod.
Flat irons.
Paper for cake tins.
Wrapping paper.
Small tub for laundry work.
6 tablespoons.
2 doz. teaspoons.

While this may seem a formidable list, it will not be found expensive. Some of the above articles may be omitted and others substituted. It must be remembered that the utensils will be well cared for, consequently will last for many years. In country schools, or where gas is not available, oil stoves may be used. In some schools, where space is limited, one small table is used, two or more pupils demonstrating the lesson under the supervision of the teacher, the pupils taking this duty in alternation. The remainder of the class observe and take notes.

The cost of material is trifling. It should not average more than fifty cents per pupil per annum, and for a large number should average less than this amount.

The Boston school kitchens are, many of them, furnished at a cost of from $200 to $300. A fair average cost for Ontario should be about $175.

PLANNING AND SERVING MEALS.

During the last quarter of school work each pupil should submit a typical menu for breakfast, dinner and supper, allowing for a certain number of people. Consider the occupation, and give reasons for the choice of food for each meal.

State how long it should take to prepare the meal, and give the cost. Insist upon variety in menus, and request the pupil to describe how the meal should be served. *System*, neatness and promptness should be especially emphasized. Clean table linen—no matter how coarse—is possible for every one. A dish of fruit or flowers, if only a bunch of green foliage, improves the appearance of the table.

During the school course a special lesson should be devoted to setting the table and serving meals, with and without a waitress, so as to give a knowledge of how a meal should be served, no matter what the pupil's position in life may be or what part she may have to perform.

A Few General Hints on Setting the Table.

Although every housekeeper has her own method for serving meals, a few general principles govern all properly regulated service. When setting the table, cover first with a canton-flannel or felt cloth, in order to prevent noise and protect the table. Place each article in its proper place and not in a confused "jumble." See that the tablecloth is spread smoothly, that the corners are of equal length, that the crease—if the cloth has been folded instead of rolled—is exactly in the centre. Place the fruit or flowers in the centre of the table.

For each person place knife, spoon and glass on the right, fork and napkin on the left. Place the glass at the point of the knife. Turn the edge of the knife towards the plate and the fork tines up, the spoon with the bowl up. If soup is to be served, place a square of bread or a roll on top of the napkin or between the folds. Place the pepper and salt at the corners of the table, unless individual salts are used, when they should be placed at the head of the plates, where the dessert spoon may be placed—the handle towards the right—for convenience.

The general rule in serving simple family meals, with or without a waitress, is for the hostess to serve the porridge and coffee at breakfast; the soup, salad and dessert at dinner, and pour the tea at the evening meal. When luncheon is served in the middle of the day the hostess usually does the greater part of the serving, as luncheon is considered to be the most informal meal of the day.

A Few Hints for Waitresses.

Learn to move quickly and quietly. Be scrupulously clean and neat in every detail of dress and habit. Before serving a meal see that hands and finger nails are clean. Always have a fresh white apron ready to put on before the meal is announced. Look over the table and see that everything is in its place before announcing a meal. Fill the glasses with water either before the family enter the dining room or immediately after they are seated. Lift the covers from hot dishes and turn them over at once in order to prevent the steam from dropping on the cloth. Take the plate from the host or hostess, and place before each person from the right side—keep the thumb well

under the plate. When passing anything from which the persons seated at table help themselves, such as vegetables, sauces, etc., always go to the left, so as to leave the right hand of the one to be served free. Keep a watchful eye over the table and pass anything apparently required.

Learn to receive instructions from the hostess in an undertone. Do not get excited and try to do too many things at once. It is an accomplishment to be a good waitress, as it requires special refinement and deftness, which are scarcely compatible with an untidy nature.

When serving meals without a waitress, the daughters of the house should consider it their special privilege to save the mother any annoyance or discomfort during the meal time. Never allow dishes, which have been used, to accumulate on the table or allow the table to become disordered. As much of the food as possible should be placed on the table before the family are seated, and the plates or dishes removed at once after using. No matter how simple the meal may be, every housekeeper should see that it is served neatly and on time. Teachers may exercise a far-reaching influence in the refining of home life by impressing upon the pupils the importance of these—too often considered—minor matters, and by giving minute instructions in the setting of table and serving the meal. One carefully planned *practice* lesson will convey more knowledge of such matters than any number of lectures or pages of theory.

CONSIDERATION OF MENUS.

The following menus and analyses are taken from bulletin No. 74, prepared in the United States Experiment Stations, and are inserted so as to give some idea of the cost and relative value of various foods in combination. *It must be remembered that the prices given are in excess of prices in Ontario, therefore the cost per menu would be less than is given in these illustrations.* The more expensive menus have been omitted. The writer of the article says :—

"In planning a well balanced diet the following points must be considered :—

(1) The use of any considerable amount of fat meat or starchy food should be offset by the use of some material rich in protein. Thus, if roast pork is to be eaten for dinner, veal, fish, or lean beef might well be eaten for breakfast or supper, or both. Bean soup furnishes a considerable amount of protein, while bouillon, consommé, and tomato soup are practically useless as a source of nutriment. Skim milk also furnishes protein, with but very little accompanying fats and carbohydrates to increase the fuel value.

(2) The use of lean meats or fish for all three meals would require the use of such foods as rice, tapioca, or cornstarch pudding, considerable quantities of sugar and butter, and more vegetables, in order to furnish sufficient fuel value.

(3) Since flour, sugar, and butter or lard enter very largely into pastries and desserts, the larger the quan-

tities of these dishes that are consumed the larger does the fuel value tend to become as compared with the protein.

The principal classes of food materials may be roughly grouped as follows as regards the proportion of protein to fuel value, beginning with those which have the largest proportion of protein and ending with those which contain little or no protein:—

Foods containing a large amount of protein as compared with the fuel value.	Fish; veal; lean beef, such as shank, shoulder, canned corned, round, neck, and chuck; skim milk.
Foods containing a medium amount of protein.	Fowl; eggs; mutton leg and shoulder; beef, fatter cuts, such as rib, loin, rump, flank, and brisket; whole milk; beans and peas; mutton chuck and loin; cheese; lean pork; oatmeal and other breakfast foods; flour; bread, etc.
Foods containing little or no protein.	Vegetables and fruit; fat pork; rice; tapioca; starch; butter and other fats and oils; sugar, syrups.

The Menus.

To illustrate the ways in which milk may be combined with other food materials, to form daily dietaries with about the amount of protein and the fuel value called for by the standard for men at moderate muscular work, a few menus are given in the following pages. These menus are intended to show how approximately the same nutritive value may be obtained by food combinations differing widely as regards the number, kind, and price of the food materials used to make up three daily meals. They also illustrate how the cost of the daily menu may

vary greatly with the kind and variety of materials purchased, though the nutritive value remains the same. These sample menus should not, however, be regarded as in any sense "models" to be followed in actual practice. The daily menus for any family will necessarily vary with the market supply, the season, and the relative expensiveness of different food materials, as well as with the tastes and purse of the consumers. The point to which we wish here to draw especial attention is that the prudent buyer of foods for family consumption can not afford to wholly neglect their nutritive value in making such purchases.

With reference to the following daily menus, several points must be definitely borne in mind. (1) The amounts given represent about what would be called for in a family equivalent to four full-grown men at ordinary manual labor, such as machinists, carpenters, mill-workers, farmers, truckmen, etc., according to the usually accepted standards. Sedentary people would require somewhat less than the amounts here given. (2) Children as a rule may be considered as having "moderate muscular exercise," and it may easily be understood that the 14-year-old boy eats as much as his father who is engaged in business or professional occupation, both requiring, according to the tentative standard, 0.8 of the food needed by a man with moderate muscular work. (3) It is not assumed that any housewife will find it convenient to follow exactly the proportions suggested in the menus. The purpose is to show her about what amounts and proportions of food materials would give the required nutrients.

A family equivalent to four men having little muscu-

lar exercise—*i.e.*, men with sedentary occupation—would require but about 0.8 the quantities indicated in the following menus. It would be very doubtful, however, if they would eat proportionally less of every food material. It would, in fact, be more probable that the amounts of meat, fish, eggs, potatoes, and bread eaten would be reduced in a much greater proportion than fruit, pastry, coffee, etc.

PECUNIARY ECONOMY OF MILK AND OTHER FOODS.

Amounts of actual nutrients obtained in different food materials for 10 cts.

Food Material.	*Lbs.*	*Oz.*	*Food Material.*	*Lbs.*	*Oz.*
Whole Milk, 10 cts. per qt.	2	0	Beef, round, 12 cts. per lb.	0	13
" " 8 "	2	8	" sirloin, 18 "	0	9
" " 7 "	2	14	Mutton, loin, 16 "	0	10
" " 6 "	3	5	Pork, salt 12 "	0	13
" " 5 "	4	0	Cod, salt 6 "	1	9
" " 4 "	5	0	Eggs, 22 cts. per doz.	0	11
Skim " 3 "	6	11	Oysters, 30 cts. per qt.	0	11
" " 2 "	10	0	Potatoes, 60 cts. per bushel.	10	0
Butter, 24 cts. per lb.	0	7	Beans, dried, 8 cts. per qt.	2	8
Cheese, 16 "	0	10	Wheat flour, 3 cts. per lb.	3	5

MENU I.—*For family equivalent to 4 men at moderate muscular work.*

Food materials.	Weight.	Cost.	Protein.	Fuel. Value.
Breakfast.	*Lbs. Oz.*	*Cents.*	*Pounds.*	*Calories.*
Bananas, 4 (or grapes, 1 pound)	1 4	6½	0.009	362
Breakfast cereal	4	3	.031	421
Milk	8		.016	162
Sugar	1½			175
Veal cutlets	1 0	20	.200	775
Potatoes	1 0	1½	.018	325
Butter	3	6		653
Rolls	12	4	.077	1,148
Coffee		3½	.010	410
Total		44½	.361	4,431
Dinner.				
Pea soup:				
Split peas	8	5	.121	820
Butter	1			217
Flour	1		.007	103
Roast beef, chuck rib	1 12	21	.275	1,260
Potatoes	1 4	1½	.022	406
Turnips	8	1	.005	67

MENU I.—*Continued.*

Dinner—Con.	Lbs.	Oz.	Cents.	Pounds.	Calories.
Cottage pudding with lemon sauce:					
1 cup flour		4		.028	410
Sugar		3			350
Butter		1½	6½		325
1 cup milk		8		.016	162
Sugar		4			465
Cornstarch		1½	2½		172
Butter		½			108
Coffee			3½	.010	410
Total			41	.484	5,275
Supper.					
Milk toast:					
Milk	2	0		.066	650
Bread	1	2	18	.107	1,356
Butter		4			869
Cornstarch		2			228
Canned salmon		8	8	.098	340
Fried potatoes:					
Potatoes		8	1	.009	162
Lard		½			132
Cake		6	4	.026	619
Coffee or tea			3½	.010	410
Total			34½	.316	4,766
Total for day			120	1.161	14,472
Total for one Man			30	.290	3,618

MENU II.—*For family equivalent to 4 men at moderate muscular work.*

Food materials.	Weight.		Cost.	Protein.	Fuel. Value.
Breakfast.	*Lbs.*	*Oz.*	*Cents.*	*Pounds.*	*Calories.*
Oatmeal	0	2		0.019	232
Milk		6½	2	.012	122
Sugar		1			175
Fresh pork sausage	1	8	18	.192	3,255
Potatoes		12	1	.013	244
Bread		12	3	.071	904
Butter		2	4		434
Coffee			3½	.010	410
Total			31½	.317	5,776
Dinner.					
Beef, for stew	2	8	15	.347	1,900
Potatoes	1	8	2	.027	487
Turnips		8	1	.005	67
Bread		8	2	.048	603
Butter		1	2		217
Indian pudding:					
Cornmeal		4		.022	414
Molasses		4	6	.007	329
Butter		½			108
Skim milk	2	0		.068	340
Coffee			3½	.010	410
Total			31½	.534	4,875

MENU II.—*Continued.*

Supper.	*Lbs.*	*Oz.*	*Cents.*	*Pounds.*	*Calories.*
Corned beef hash:					
Corned beef, canned		8	6	.142	560
Potatoes		8	1	.009	162
Bread		12	3	.071	904
Butter		2	4		434
Apples		12	1	.003	191
Milk	2	0	6	.066	725
Total			21	.291	2,976
Total per day			84	1.142	13,627
Total for one man			21	.285	3,407

In these menus the amount of milk has, as a rule, been taken as representing somewhere near the average consumption. The amount of milk can be increased in any of the menus given above either by substituting it to some extent for coffee or tea, or by using more milk and smaller quantities of meats, butter or eggs. Roughly speaking, 1 quart of whole milk could be substituted for half a pound of meat or eggs and the amount of nutrients would be the same, while a pint of milk would give as large a fuel value as 1½ ounces of butter, and in addition considerable protein not furnished by the latter.

This replacement of meats by milk is illustrated in the following menu, in which a diet with a rather small quantity of milk is so changed as to include a much larger amount. Thus for breakfast in the modified ration a pint and a half of milk is made to take the place of half a pound of broiled steak. For dinner a quart of skim milk (or buttermilk) is called for, or a glass for each person unless some of it is used in the cooking. At the same time, 4 ounces less roast pork is required. In the same way a glass of whole milk is allowed each person for supper, or the bread can be made into milk toast and the most of the extra milk used in this way. This allows the canned salmon to be reduced 6 ounces.

MENU III.—*For family equivalent to 4 men at moderate exercise.*

Food materials.	Weight of food. With small amount of milk.	Weight of food. With large amount of milk.	Food materials.	Weight of food. With small amount of milk.	Weight of food. With large amount of milk.
Breakfast.	*Lbs. Oz.*	*Lbs. Oz.*	*Dinner*—Con.	*Lbs. Oz.*	*Lbs. Oz.*
Bananas, apples, or pears	0 12	0 12	Apple fritters:		
Wheat preparation	4	4	Flour	2	2
Milk	8	8	1 egg	2	2
Sugar	2	2	Lard	1½	1½
Broiled sirloin steak	1 4	12	Bread	8	8
Baked potatoes	1 8	1 8	Butter	2	2
Hot rolls	1 0	1 0	Extra skim milk		2 0
Butter	2½	2½	*Supper.*		
Extra milk		1 8	Canned salmon	1 6	1 0
Dinner.			Potatoes	12	12
Tomato soup	1 12	1 12	Bread	8	8
Roast pork	1 12	1 8	Butter	2	2
Mashed potatoes	1 4	1 4	Berries, canned or fresh	8	8
Turnips	8	8	Extra milk		2 0
Apple fritters:					
Apples	8	8			

Cost, protein, and fuel value of the above.

	Cost.	Protein.	Fuel Value.
With small amount of milk.	*Cents.*	*Pounds.*	*Calories.*
Breakfast	48	0.39	5,300
Dinner	51	.39	5,800
Supper or lunch	33½	.34	3,200
Total per day	132½	1.12	14,300
Total for one man	33	.28	3,575
With large amount of milk.			
Breakfast	43	.36	5,270
Dinner	47½	.41	5,400
Supper or lunch	34½	.34	3,600
Total per day	125	1.11	14,270
Total for one man	31	.28	3,567

Menus VI and VII, following, are intended to illustrate how nourishing food can be procured in sufficient quantities and moderate variety at a cost of not over 16 cents per day. The cost to the farmer would be much less, since these menus call for considerable amounts of milk,

which is hardly worth more than one-half or one-third as much on the farm as it costs in the towns and cities. Coffee has not always been indicated, but can be introduced for any meal at a cost of from ½ to 1½ cents per cup, according to how much coffee is used in making the infusion, and how much sugar, milk, and cream are added.

It is, of course, not important that each meal, or the total food of each individual day, should have just the right amount of nutrients, or that the proportions of protein and fuel ingredients should be exactly correct so as to make the meal or day's diet well balanced. The body is continually storing nutritive materials and using them. It is not dependent any day upon the food eaten that particular day. Hence an excess one day may be made up by a deficiency the next or *vice versa*. Healthful nourishment requires simply that the nutrients as a whole, during longer or shorter periods, should be fitted to the actual needs of the body for use.

MENU IV.—*For family equivalent to 4 men at moderate muscular work.*

Food materials.	Weight.	Cost.	Protein.	Fuel Value.
Breakfast.	*Lbs. Oz.*	*Cents.*	*Pounds.*	*Calories.*
Bananas, 4 (or grapes, 1 pound)	1 4	6½	0.009	362
Breakfast cereal	4		.031	421
Milk	6	3	.012	122
Sugar	2			232
Mutton chops	1 4	20	.165	1,812
Potatoes	1 0	1½	.018	325
Butter	3	6		653
Rolls	12	4	.077	1,148
Coffee		3½	.010	410
Total		44½	.322	5,485
Dinner.				
Tomato soup	2 0	12	.036	370
Roast pork	2 8	32	.353	3,350
Potatoes	1 4	1½	.022	406
Turnips	8	1	.005	67

MENU IV.—*Continued.*

Dinner—Con.	Lbs.	Oz.	Cents.	Pounds.	Calories.
Tapioca pudding:					
Tapioca		3		.001	310
Apples	1	0	7	.004	255
Sugar		2			232
Cream		4		.006	228
Coffee			3½	.010	410
Total			57	.437	5,628
Supper.					
Milk toast:					
Milk	2	0		.066	650
Bread	1	2	18	.107	1,356
Butter		4			869
Cornstarch		2			228
Sliced cold pork		8	6	.071	670
Fried potatoes:					
Potatoes		8	1	.009	162
Lard		½			132
Cake		6	4	.026	619
Coffee or tea			3½	.010	410
Total			32½	.289	5,096
Total for day			134	1.048	16,209
Total for one man			33½	.262	4,052

MENU V.—*For family equivalent to 4 men at moderate muscular work.*

Food materials.	Weight.		Cost.	Protein.	Fuel Value.
Breakfast.	*Lbs.*	*Oz.*	*Cents.*	*Pounds.*	*Calories.*
Baked apples	2	0	2	0.008	510
Boiled hominy		8		.041	823
Milk		10	4½	.020	202
Sugar		3			350
Broiled sirloin		10	11	.099	650
Potatoes		8	1	.009	162
Muffins:					
1 egg		4	5	.032	162
2 cups flour		8		.057	820
Butter		2	4		435
Coffee			3½	.010	410
Total			31	.276	4,524
Dinner.					
Tomato soup	2	0	6	.036	370
Veal stew, shoulder	2	0	20	.332	1,350
Potatoes	3	0	4½	.054	975
Apple dumpling:					
1 egg		2		.016	81
4 apples	1	8	8	.006	382
½ cup lard		4			1,055
1 cup flour		4		.028	410

MENU V.—*Continued.*

Dinner.—Con.	*Lbs.*	*Oz.*	*Cents.*	*Pounds.*	*Calories.*
Sauce for dumpling:					
Butter		1	3		217
Sugar		4			465
Bread		12	3	.071	904
Butter		1	2		217
Coffee or tea			3½	.010	410
Total			50	.553	6,836
Supper or lunch.					
Dried canned corned beef		8	6	.142	560
Potato croquette		8	1	.009	162
Biscuit		12	4	.070	1,297
Butter		1½	3		325
Oranges, 4	1	4	7	.007	400
Skim milk	1	6	2	.046	234
Total			23	.274	2,978
Total for day			104	1.103	14,338
Total for one man			26	.275	3,585

MENU VI.—*For family equivalent to 4 men at moderate muscular work.*

Food materials.	Weight.		Cost.	Protein.	Fuel Value.
Breakfast.	*Lbs.*	*Oz.*	*Cents.*	*Pounds.*	*Calories.*
Cornmeal, in mush or cake	0	5	1	0.022	414
Milk		6	1	.012	64
Sugar		2	½		232
Toast		10	2½	.059	753
Butter (24 cents per pound)		2	3		434
Total			8	.093	1,897
Dinner.					
Beef roll (for roasting)	3	0	15	.417	2,280
Potatoes	1	8	2	.026	488
Beets		8	1	.007	85
Bread		10	2½	.059	753
Butter		2	3		434
Total			23½	.509	4,040
Supper.					
Beans, baked	2	0	6	.446	3,180
Pork		12	6	.012	2,556
Potatoes, fried	1	8	2	.026	488
Lard		2	1		537
Bread		10	2½	.059	753
Butter		2	3		434
Total			20½	.543	7,948
Total per day			20½	1.145	13,885
Total for one man			13	.285	3,471

MENU VII.—*For family equivalent to 4 men at moderate muscular work.*

Food materials.	Weight.	Cost.	Protein.	Fuel Value.
Breakfast.	*Lbs. Oz.*	*Cents.*	*Pounds.*	*Calories.*
Oatmeal	0 6	2	0.059	697
Skim milk, 1 pint	1 0	1½	.034	170
Sugar	2	½		232
Bread (homemade)	1 0	3	.095	1,205
Sausage	10	6	.080	1,358
Butter (24 cents per pound)	1	1½		217
Total		14½	.268	3,879
Dinner.				
Beef flank, stew	2 8	15	.430	2,988
Potatoes (60 cents per bushel)	3 0	3	.054	975
Cabbage	12	1	.013	105
Cornmeal pudding:				
Cornmeal	4	½	.022	414
Skim milk, 1 quart	2 0	3	.068	340
Molasses	12	1	.020	987
Total		22½	.604	5,889
Supper.				
Beef, warmed in gravy	1 8	3	.086	593
Hot biscuit	2 0	6	.340	2,600
Butter	2	3		434
Milk, 1 quart	2 0	6	.033	325
Total		18	.259	3,957
Total per day		55	1.134	3,645
Total for one man		14	.285	3,411

DISCUSSION OF THE MENUS.

These menus attempt to give, as nearly as convenient, the range of food materials and the variety of combination which might be found in the average well-to-do household. Some of the menus are more varied and costly than others, and a few are given showing the effect of the use of more milk, and also how a diet might easily become one-sided. The quantities of the different foods used per meal will not, it is believed, be found out of proportion to each other, though of course they will not suit every family. The weights of all materials, oat-

meal and other cereals, meat, vegetables, etc., are for these substances as purchased.

The calculation of the quantities of nutrients contained in the different foods is based upon the average percentage composition of these materials. Inasmuch as the fats and carbohydrates are used simply as fuel they are not shown in the menus, only the quantity of protein and the fuel value of the food being of interest.

The cost of the different food materials must of necessity be more or less of a varying quantity, depending upon the season of the year, the character of the markets, large or small, city or country, etc. Of the more important food materials the assumed price per pound is as follows: Beef loin, 18 to 25 cents; shoulder, 12 cents; round, 14 cents; chicken, 15 cents; mutton loin, 16 cents; lamb leg, 20 cents; bacon, 16 cents; sausage, 10 cents; milk, 3 cents (6 cents per quart); skim milk, 1½ cents (3 cents per quart); butter, 32 cents; cheese, 16 cents; eggs, 16 cents (24 cents per dozen); flour and meal, 2½ to 3 cents; cereals, 5 to 8 cents; bread, 4 cents; potatoes and other vegetables, 1½ cent (90 cents per bushel); bananas, about 8 cents (20 cents per dozen); oranges, about 7 cents (25 to 40 cents per dozen); apples, 1½ cent per pound (90 cents per bushel).

It is probable that the above figures represent more nearly the average prices of the different food materials in the eastern part of the country than in the central and western portions, where meats, cereals, and many other products are somewhat cheaper. It is also to be borne in mind that by observing the markets many food materials can be purchased much cheaper than here

indicated, while on the other hand there may be times when they will be much more expensive. The choice of vegetables and fruits will naturally be governed by their abundance and cost.

Another point that must not be overlooked is that the quantities, and consequently the costs, here given are for four working men; that is to say, men engaged in moderately hard muscular labor. Of course, different individuals differ greatly in their needs for food. These figures express only general averages and are based upon the best information accessible.

A Few Points to be Considered in Planning Meals.

Dietetic authorities advise people who are engaged in active muscular work to partake of the more substantial meal in the middle of the day, leaving such articles of food as soup—which is a valuable stimulant after a day of hard work—fruit, cake, etc., for the evening meal, when the system is too much exhausted to digest the more concentrated foods. When men are obliged to take cold lunches in the middle of the day the housewife should see that the lunch basket contains the necessary nourishment in the form of cheese, cold meat, meat or fish sandwiches, hard boiled eggs, a fish or vegetable salad, cold pork and beans, rice pudding, whole wheat bread and butter, a bottle of milk or *strained* tea or coffee, pie, doughnuts, etc.

Remember, a man working in the open air or in a large building requires food which will not oxidize too quickly, or in other words, food which will keep up the fuel and force necessary for his work. Supper in such cases

should consist of a good broth or well made soup, and the lighter foods; but breakfast and dinner should be more substantial. It is a question of economy to provide suitable food for the wage-earner. The children may be equally well nourished on a less expensive diet, such as whole wheat bread and butter, milk puddings, fruit, green vegetables, cereals, milk, and meat once a day.

On the other hand the individual engaged in sedentary employment, such as book-keeping, teaching, needlework, etc., should dine later in the day, as it leaves a longer interval for digestion, which is much slower when the individual is confined in a close office or work-room, and where little exercise is taken.* Care should be taken in planning meals for this class to avoid food which requires much oxygen, such as fresh pork, fried food, sausage, warm bread, pastry, griddle cakes, etc. The mid-day meal of a brain worker or business man should be light; a soup, glass of milk (hot or cold), fruit, bread and butter, vegetable salad, a broiled chop or steak, etc., are suitable for luncheon.

Special attention should be given to the diet of school children. (See p. 153.)

Students and children who are obliged to study at night should, as a rule, take some light nourishment before retiring; a biscuit, a piece of bread and butter, or a glass of hot milk, is sufficient.

Young girls, who are employed in shops, factories, etc., frequently hurry away to their work in the morning

* The teacher may make this clear by comparing the digestion of the two classes to the action of the air upon coal in a range with the drafts open and closed, the more rapid combustion, effect of oxygen, etc.

without taking a substantial breakfast. It is needless to say that such action is sure to be followed by a physical breakdown. A glass of hot milk or an egg beaten and added to a glass of milk will serve as an occasional substitute for a more substantial meal, but is not enough to sustain active exercise for any length of time.

Another point to consider in the planning of meals is economy of fuel. The thoughtful housekeeper will arrange to have food requiring long, slow cooking, such as stews, soup stock, bread, etc., and ironing done by the same fuel. Broiling, toasting, omelets, etc., require a quick fire. It is in the careful consideration of details that economy in both food and fuel may be exercised.

SUGGESTIVE QUESTIONS.

In giving instruction in Domestic Science, the teacher must be careful to explain the meaning of any words used which the pupils would not be likely to understand; for instance, oxidation, combustion, solubility, etc., and many of the terms used in the analysis, such as fermentation, casein of milk, albumen, cellulose, etc. In order to keep the attention of pupils fixed on a subject, frequent illustrations and comparisons should be made.

Questioning is one of the best methods of riveting attention, and as every teacher has not the faculty of asking questions, a few suggestive ones are given which may prove helpful.

Why do we eat food?

What is nitrogenous food?

What is its chief office?

Where is it to be found?

In what section of vegetable kingdom is this compound abundant?

What is the chief nitrogenous compound in meat and eggs?

Of what is it composed?

Why do we call these compounds nitrogenous?

Do they serve any other purpose besides building up flesh?

Which are the most important heat-giving compounds?

What is the proportion in food they should bear to the flesh-forming compounds?

What other compounds are necessary to form a perfect food?

Give their use?

Where are they to be found?

What is common salt?

Where is it found?

Why do we use it?

Give the three digestive juices.

What kind of mineral matter do we find in vegetables?

Why should potato parings, leaves and stalks of cabbage not be put in the dust bin or garbage pail?

What should be done with them?

Which are the most important warmth-giving foods?

Give another name for these foods?

Why are they so called?

What is combustion?

How do these foods produce force, etc.?

What other elements do these foods contain?

Why are fats and oils more valuable as heat-givers than starch or sugar?

What elements unite and form water?

What is the proportion of water in the body?

Give its use?

Explain the difference in the digestion of starch and fat?

Why does starch need cooking?

To what kingdom does it belong?

Which section is of most value?

How is starch changed into sugar?

What changes food into blood?

What gives the red color to blood?

What mineral helps digestion most?

What is sugar?

What causes sugar to ferment?

What is the result?

Where is it to be found?

What are food adjuncts?

Of what value are they?

Give the names of combustible nutrients.

Give the names of incombustible nutrients.

For a substance to undergo combustion, what must it contain?

What supports combustion?

What is chemically pure water?

What causes the hardness of water?

What is gluten?

What is dextrine?

Where is it found?

In what way does dextrine differ from starch?

What is decomposition?

SCHEDULE OF LESSONS FOR PUBLIC SCHOOL CLASSES.

LESSON.

I. Information regarding the conduct of classes. Practice in measuring. Practice in lighting gas-burners and oven. Practice in lighting and regulating a range.

II. Fruit—Applesauce. Coddled apples. Stewed prunes.

III. Starch—Boiled rice. Potatoes, boiled and mashed.

IV. Starch—Thickening liquids with flour.

V. Starch—Practice in No. 4.

VI. Vegetables—Onions, cabbage, parsnips, etc.

VII. Eggs—Boiled eggs. Poached eggs. Toast.

VIII. Eggs and milk—Boiled and baked custard.

IX. Flour mixtures—Popovers, griddle cake.

X. Flour mixtures—Milk biscuits. Corn bread. Apple pudding.

XI. Bread—Making sponge, kneading, and setting to rise.

XII. Bread—Moulding and baking.

XIII. Fish—Boiled and baked fish. Creamed fish and sauce.

XIV. Review of theory and recipes.

XV. Meat—Roasting meat. Soup stock.

XVI. Meat—Stewed meat.

XVII. Meat—Cold meat and broiling.

XVIII. Salads.

XIX. Beans.

XX. Plain puddings.

NOTE.—After this each teacher must arrange lessons according to circumstances, age of pupils, etc., alternating cooking with lessons in care of kitchen and utensils, and lectures on sanitary matters, laundry work, setting table, and serving.

APPENDIX.

Outlines Nos. I and II, for class work, are contributed by Prof. Kinne, of Teachers' College, Columbia University, N. Y. City.

Outline I.

The following outline is offered as a tentative plan of work, for an average class of girls, in the highest grades of the Public school. The exact order of lessons depends in a measure on the skill and interest of the pupils, and the special dishes selected to illustrate a principle, upon the circumstances of the pupils, and upon the season of the year.

It should be noted that beginning with the third lesson, there are four lessons on the cooking of carbohydrates; then four on the cooking of nitrogenous foods; next the batters, combining the two, and introducing the use of fat, and so on. It is the purpose of this arrangement to enforce the effects produced by heat on the food principles, singly and in combination; to alternate the groups, so that there is a constant review of principles already established; and to give practical work of increasing difficulty.

The course in cooking should be preceded by a few lessons in house-work; and at least one on the care of the kitchen. It is taken for granted that the lessons are accompanied by a study of food values, the cost of food, marketing, etc.

1. Simple experiments in combustion—to illustrate the structure of stoves and the care of such stoves. Study

of the fuel and apparatus to be used in the school kitchen; practice in using the apparatus; comparison with other apparatus.

2. Utensils—what they are, of what materials, and why. It is well to have pupils make a list in note-book of simple kitchen furnishing.

Experiments with the boiling of water, in Florence flask, in tea-kettle, and in covered saucepan, using thermometer. Use of double boiler. Compare with boiling water the temperature of fat hot enough for frying, and also that of the oven. To illustrate the two latter, croutons may be made.

3. Measuring—experiment with the cooking of starch in water; cornstarch pudding, or tapioca or sago jelly. Develop the idea of the effect of the boiling temperature on the starch grains, the bursting of the grains, and the change in flavor due to continued cooking.

4. A cereal and a fruit,—say, baked apples. In the cereal, in addition to the starch, is the cooking of the woody fibre. Note in both cereal and fruit the flavors developed by heat, the cooking being a continuation, as it were, of the ripening process.

5. A starchy and a green vegetable; as, for instance, potatoes and cabbage. Here, again, are the two principles, cookery of starch and vegetable fibre; again the development of flavor by heat. Cookery of peas and beans would better be deferred until the pupils are familiar with the effect of water on nitrogenous substances.

If time allows, a sauce may be made to serve with a vegetable, or this may be given in the next lesson.

6. Vegetable soups, without meat stock. This is in part a review lesson. Opportunity is offered here for the study of proportions, several ingredients being used, how much vegetable pulp or juice to how much liquid; how much thickening, and how much salt to a quart of soup.

7. Eggs. Experiments to show the coagulating point of the white and yolk, followed by soft and hard cooking of eggs, and possibly a plain omelet.

8. Eggs and milk.

9. Oysters.

10. Fish.

11, 12, 13. Batters. In these three lessons study especially proportions, methods of mixing and baking. A good sequence of batters is the following: popovers, griddle cakes, muffins, and baking powder biscuit; or a sweet batter in the form of a plain cake may be given for sake of variety.

14. Tender meat. Pan broiling and broiling.

15. Tender meat. Roasting and making of gravy.

18. Tough meat. Soups and stews.

19. Tough meat. Soups and stews.

Made dishes of meat can be given in these two lessons also.

20. Beverages.

21. Salads.

22. Desserts.

23. A breakfast.

24. A luncheon.

25. A dinner; or, dinner and supper.

Other topics, in addition to these, or in place of some of them; bacon, and trying out of fat; cheese dishes; canning and preserving; dishes for invalids; other desserts and made dishes.

Outline II.

This outline has been found practical in a short course where it was advisable to give the pupils work in the preparation of simple meals. The plan can be followed in a longer course.

Introductory Lesson: Fire-making, Measuring, etc.

1. A cereal and fruit.
2. Eggs.
3. Bacon, and the trying out of fat.
4. Plain muffins, or griddle cakes. Coffee.
5. A breakfast.
6. Vegetables. Vegetable soup.
7. A made dish of meat or fish.
8. Salad and dressing.
9. Muffins or biscuit.
10. A luncheon or supper.
11. Vegetables. Macaroni.
12. Meat.
13. Sauces and gravies. A desert.
14. Bread or rolls.
15. A dinner.


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